4-2020

The Moderating Effect of Buying Impulsivity on the Dynamics of Unplanned Purchasing Motivations

Jacob Suher
Portland State University, jsuher@pdx.edu

Wayne D. Hoyer
University of Texas at Austin

Citation Details

Suher, J., & Hoyer, W. D. (2020). The Moderating Effect of Buying Impulsivity on the Dynamics of Unplanned Purchasing Motivations. Journal of Marketing Research, 57(3), 548-564. Copyright © 2020 by American Marketing Association http://doi.org/10.1177/0022243720912284

Title:
The Moderating Effect of Buying Impulsivity on the Dynamics of Unplanned Purchasing Motivations

Authors:
Jacob Suher, Assistant Professor of Marketing
School of Business, Portland State University
PO Box 751
Portland, OR 97207-0751
503-725-9875
jsuher@pdx.edu

Wayne D. Hoyer, James L. Bayless/William S. Farish Fund Chair for Free Enterprise and Professor of Marketing
McCombs School of Business, University of Texas at Austin
Department of Marketing, CBA 7.246
2110 Speedway Stop B6700
Austin, TX 78712
512-471-1128
wayne.hoyer@mccombs.utexas.edu

Author note & acknowledgement:
The authors thank Susan Broniarczyk, Mary Hayhoe, Jeff Inman, and Raj Raghunathan for their feedback as members of the first author's dissertation committee. The authors acknowledge financial support provided by the Bonham Fund, University of Texas at Austin.

Data Statement:
The research data and SAS code are available from the corresponding author upon request.

The Moderating Effect of Buying Impulsivity on the Dynamics of Unplanned Purchasing Motivations

[ABSTRACT]

Past studies of in-store decision making assume that motivations for unplanned purchases are homogeneous throughout a shopping trip. In response to this assumption, the authors develop a conceptual framework to explain how consumers' internal (i.e., intrinsic) and external (i.e., extrinsic) motivations for unplanned purchases actually vary during a shopping trip. Two field studies and five online experiments provide evidence that the personality trait of buying impulsivity predicts differences in whether a shopper initially focuses on internal motivations (e.g., "because I love it") or external motivations (e.g., "because it is on sale") for unplanned purchases at the beginning of a shopping trip and, consistent with a mechanism of motivation balancing, that motivations for unplanned purchases change as a shopper satisfies their initial motivations. The studies also demonstrate how the level of buying impulsivity influences the effectiveness of point-of-purchase messages at stimulating unplanned purchases and consumers' relative spending on unplanned purchases. Overall, these findings address conflicting results in past shopping studies, advance the literatures on consumer motivation and sequential choice, and contribute insights to enhance shopper-marketing programs.

Two shoppers, Jamie and Alex, walk into a grocery store. As Jamie enters, a fruit display catches her attention and she makes an unplanned purchase of fresh berries because she loves their flavor. Jamie then spends the rest of her shopping trip gathering planned items and considering other unplanned purchases. In particular, a refrigerated display at the back of the store reminds Jamie that her family is out of eggs and she makes an unplanned purchase to replenish their stock at home. In contrast, Alex passes the fruit and walks to a cereal display with a bright yellow sale sign. Cereal was not on Alex's shopping list, but he makes an unplanned purchase of two boxes to save money. Alex then procures his list items while considering other products on sale. Once at the checkout, he makes a final unplanned purchase of an iced coffee drink to try something new.

The above examples illustrate a key point of the current research that, within a shopping trip, consumers can make multiple unplanned purchases that reflect internal (i.e., intrinsic) and external (i.e., extrinsic) purchase motivations (Chandon, Wansink, and Laurent 2000; Van Trijp, Hoyer, and Inman 1994). As shown in Table 1, previous studies examine a variety of these types of in-store motivations (Block and Morwitz 1999; Hoyer 1984; Park, Iyer, and Smith 1989; Stilley, Inman, and Wakefield 2010). Furthermore, as suggested by goal management theory, unplanned purchasing motivation may systematically change over the course of sequential choices during a shopping trip (Dhar and Simonson 1999; Fishbach and Dhar 2005). However, our understanding of the different motivations behind unplanned purchases, and their possible dynamics, is rather limited. The primary issue is that extant research has treated all unplanned purchases as similar and has not distinguished between different motivations for unplanned purchasing (Bell, Corsten, and Knox 2011; Gilbride, Inman, and Stilley 2015; Hui, Huang, et al. 2013; Inman, Winer, and Ferraro 2009; Sciandra, Inman, and Stephens 2019; Stilley, Inman, and Wakefield 2010).

[INSERT TABLE 1 ABOUT HERE]

In light of this focus, there are several important research gaps. First, there is a need for research to elucidate the differing consumer motives behind unplanned purchases (Hui, Huang, et al. 2013, p. 461). Sometimes these purchases are for utilitarian reasons such as saving money, while in other cases they are for hedonic pleasure or enjoyment. Second, consumers' motivations for unplanned purchases can change within a shopping trip, and past studies have not examined when and why this occurs. Third, it is managerially important to determine whether the factors that predict motivations for unplanned purchases influence purchasing behaviors. Consumers' dynamic motivation patterns may moderate the effectiveness of in-store marketing at stimulating unplanned purchases and may predict different types of unplanned purchases during a trip.

In response to these critical research gaps, the current paper studies consumer motivations for unplanned purchases in order to advance theories of shopper motivation and sequential choice. Unplanned purchasing presents a rich context to address the research priorities of understanding the consumer journey and increasing the relevance of marketing communications (MSI 2018). In particular, unplanned purchases account for the majority of retail purchases (i.e., 60% of grocery purchases are unplanned; Inman, Winer, and Ferraro 2009), and in-store retail communications are the most influential touchpoint on consumers' brand considerations (Baxendale, Macdonald, and Wilson 2015). Unplanned purchasing behavior is also relevant to sequential choice theory in that consumers typically consider several unplanned purchases in a shopping trip (Hui, Huang, et al. 2013). We contribute to these important topics by developing a conceptual framework to address how the motivations that underlie unplanned purchases may vary during a shopping trip.

Our conceptual framework proposes that the personality trait of buying impulsivity will predict differences in whether a shopper focuses first on internal (e.g., "because I love it") or on external (e.g., "because it is on sale") motivations for unplanned purchases. Then, based on a

mechanism of motivation balancing (Dhar and Simonson 1999; Fishbach and Dhar 2005), the framework predicts that the likelihood of internal versus external motivations for unplanned purchases will change as a function of a consumer's having satisfied their initial unplanned purchasing motivations. In addition, we consider a boundary condition (i.e., budget focus) of the proposed motivation dynamics. Two field studies and five online shopping experiments provide evidence for the proposed patterns of motivations for unplanned purchases and demonstrate that a consumer's level of buying impulsivity predicts differences in their responses to point-of-purchase messages and the types of unplanned purchases made within a shopping trip. Overall, our multi-method investigation makes the following four main contributions to the marketing literature.

First, our framework identifies distinct consumer motivations for unplanned purchasing. Building on past studies of purchase motivation (Chandon, Wansink, and Laurent 2000; Van Trijp, Hoyer, and Inman 1994), we propose that consumers tend to make unplanned purchases for disparate internal and external motivations. This distinction addresses the need to understand *why* consumers make unplanned purchases (Hui, Huang, et al. 2013, p. 461; Inman, Winer, and Ferraro 2009, p. 28; Shiv and Fedorikhin 1999, p. 289) and resolves a contradiction in previous research on the trait of buying impulsivity (Rook and Fisher 1995). Whereas past studies report that buying impulsivity is a nonsignificant predictor of total aggregated unplanned purchasing (Hui, Huang, et al. 2013; Kollat and Willett 1967; Sciandra, Inman, and Stephens 2019), we propose that consumers' level of buying impulsivity predicts differences among them in the likelihood of internal versus external motivations for unplanned purchases at the beginning of a shopping trip.

Second, we contribute to the in-store decision-making literature by providing evidence that the likelihood of different motivations for unplanned purchases changes within a shopping trip. This is important because extant studies on shopping dynamics are limited to studying observable

purchase characteristics (e.g., category hedonicity) as opposed to consumers' subjective purchase motivations (Dhar and Simonson 1999; Gilbride, Inman, and Stilley 2015; Hui, Bradlow, and Fader 2009; Hui, Huang, et al. 2013; Vohs and Faber 2007). In other words, our research moves beyond past studies by directly testing hypotheses regarding the dynamic patterns of motivations for unplanned purchases. In particular, we investigate an underlying mechanism of motivation balancing (Fishbach and Dhar 2005) whereby greater in-store effort spent considering unplanned purchases should satisfy consumers' initially salient motivations for unplanned purchases, thus enabling the pursuit of previously less salient motivations. Our studies test the proposed motivation dynamics and, while the process is inherently hard to establish empirically, we provide evidence consistent with the mechanism of motivation balancing by manipulating a theoretically relevant boundary condition (i.e., budget focus) and measuring motivation salience within a shopping trip.

Third, we apply our conceptual framework to the likelihood of unplanned purchasing by considering the dynamic effectiveness of in-store marketing. In particular, if motivations for unplanned purchases vary within a shopping trip, then the promotional fit effect (Lee and Higgins 2009) suggests that matching the appeal of a point-of-purchase message to a consumer's in-store motivations should increase the likelihood of an unplanned purchase. Whereas data limitations prevented past studies from investigating the causal impact of in-store marketing on unplanned purchasing (Gilbride, Inman, and Stilley 2015; Hui, Huang, et al. 2013), we use an online shopping experiment to test consumers' responses to point-of-purchase messages that appeal either to internal motivations (e.g., "Try Something New") or to external motivations (e.g., "Low Price" or "Forgotten Need"). Our evidence that a dynamic fit effect influences unplanned purchasing provides behavioral support consistent with the proposed mechanism of motivation balancing and illustrates the managerial relevance of predicting consumer motivations for unplanned purchases.

Fourth, our conceptual framework addresses how buying impulsivity influences the types of products people purchase during a shopping trip. Within a product category, we expect the level of buying impulsivity to predict differences in the likelihood of relatively high- versus low-priced unplanned purchases (Sheehan and Van Ittersum 2018). Support for this prediction would provide evidence that high- and low-impulsivity consumers have distinct patterns of spending. Further, our research connects buying impulsivity to the mental accounting literature on the pain of paying (Prelec and Loewenstein 1998) and demonstrates that, within a product category, consumers predictably make different types of unplanned purchases in different phases of a shopping trip.

From a managerial perspective, our investigation of motivations for unplanned purchases offers opportunities for marketers to use non-price marketing tactics and to link the content of a communication to the context in which it appears (MSI 2018). For example, we describe how to increase the effectiveness of traditional in-store merchandising and how to leverage technologies such as digital displays and mobile applications (Lee et al. 2018; Roggeveen, Nordfält, and Grewal 2016; Shankar et al. 2016). Thus, understanding consumers' different motivations for unplanned purchases will help retailers and brands develop consumer-based strategies to stimulate incremental sales and enhance the in-store customer experience (Lemon and Verhoef 2016).

The organization of the remainder of this paper is as follows. We first develop a conceptual framework regarding consumer motivations for unplanned purchases. Two field studies provide evidence for the predicted motivation patterns, and three online shopping experiments enhance the internal validity of our evidence and examine the underlying process. Two additional experiments demonstrate the impact of buying impulsivity on the effectiveness of point-of-purchase messages at stimulating an unplanned purchase and on relative spending for a given unplanned purchase. The paper concludes with a discussion of its theoretical contributions and managerial implications.

CONCEPTUAL FRAMEWORK

Figure 1 presents our conceptual framework. The framework proposes that a consumer's level of buying impulsivity will predict differences in their initial likelihood of internal versus external motivations for unplanned purchases (see Table 1 and Web Appendix A for motivation examples and review). In addition, we propose that motivation likelihood will dynamically change as a function of a consumer's having satisfied their initial motivations. The following sections develop our hypotheses for the impact of the level of buying impulsivity on unplanned purchase motivations, the boundary condition of budget focus, and the influence of motivation dynamics on the effectiveness of point-of-purchase messages and relative spending on unplanned purchases.

[INSERT FIGURE 1 ABOUT HERE]

Level of Buying Impulsivity Predicts the Initial Salience of Motivations for Unplanned Purchases

We first review the evidence that the trait of buying impulsivity relates to differences in the salience of consumer motivations for unplanned purchases. Buying impulsivity refers to the tendency to buy spontaneously, unreflectively, immediately, and kinetically (Rook and Fisher 1995) and represents a consumer's likelihood to respond affirmatively to their internal buying impulses (Rook 1987). For example, high- as opposed to low-impulsivity consumers are more likely to agree with the statement "I buy things according to how I feel at the moment" and to make an unplanned purchase when a product looks "great" (Rook and Fisher 1995). In contrast, while low-impulsivity consumers are just as likely to make unplanned purchases (Hui, Huang, et al. 2013; Kollat and Willett 1967), they tend to spend less money on a given unplanned purchase (Vohs and Faber 2007) and are more likely to be motivated by external rewards or instrumental

needs as opposed to internal impulses (Rook and Fisher 1995). In other words, high- and low-impulsivity consumers should have different tendencies to act on internal or external motivations. On the one hand, a high impulsivity consumer is inherently more likely to make a purchase out of personal interest or enjoyment in the product itself (i.e., internal motivations). On the other hand, a low impulsivity consumer is inherently more likely to make a purchase for external motivations such as saving money, utilitarian needs, or the receipt of an external reward (e.g., money or a gift).

In support of the idea that the level of buying impulsivity predicts differences in the salience of internal versus external unplanned purchasing motivations, there is evidence for a positive relationship between impulsivity and internal as opposed to external motivations. Babin, Darden, and Griffin (1994) find a positive correlation between consumers' level of experiential shopping motivations before a shopping trip and the amount of hedonic value experienced during a trip. Similarly, Beatty and Ferrell (1998) identify positive relationships between buying impulsivity and two measures related to internal shopping motivation: in-store browsing and the felt urge to buy impulsively. Furthermore, two meta-analyses find that buying impulsivity is the strongest predictor of a consumer's likelihood to make an impulse purchase, a specific type of internally motivated unplanned purchase (Amos, Holmes, and Keneson 2014; Iyer et al. 2019).

Thus, together with its definition, the positive relationship between buying impulsivity and internal shopping motivations provides evidence that the level of buying impulsivity will predict differences in the initial salience of internal versus external motivations for unplanned purchases.

H1: At the beginning of a trip, a high- as compared to low-impulsivity consumer will be more likely to have an internal versus external motivation for an unplanned purchase.

Unplanned Purchase Consideration Moderates the Effect of Level of Buying Impulsivity on the Salience of Motivations for Unplanned Purchases

We now consider how motivations for unplanned purchases may change during a shopping trip. Goal management studies provide evidence that consumers dynamically manage multiple, conflicting goals over a series of choices (Dhar and Simonson 1999; Fishbach and Dhar 2005). In particular, there is evidence for a process of motivation balancing in a myriad of consumer contexts including goals related to health, academics, fundraising, and loyalty programs (Fishbach, Dhar, and Zhang 2006; Kivetz and Simonson 2002; Koo and Fishbach 2008). Additionally, self-control studies find that people tend to balance internal and external motivations over sequential activities (Inzlicht, Schmeichel, and Macrae 2014). When an initial activity is internally motivated, people perform better in and prefer subsequent tasks involving external rather than internal motivations, whereas the reverse pattern occurs (i.e., a switch from external to internal motivation) when an initial activity is externally motivated (Choi and Fishbach 2011; Laran and Janiszewski 2011).

Building on Gilbride, Inman, and Stilley's (2015) evidence for the dynamic balancing of planned and unplanned purchases, we expect the *consideration* of unplanned purchases to satisfy consumers' initial motivations for unplanned purchases and lead to changes in the salience of motivations for unplanned purchases. On the one hand, high-impulsivity consumers should perceive their effort spent considering unplanned purchases as progress toward satisfying their initial internal motivations, leading to an increase in the salience of external motivations. For example, if a high-impulsivity consumer makes progress toward satisfaction of initial internal motivations by considering unplanned purchases out of personal interest (e.g., "looks great"), the subsequent likelihood of this consumer's expressing an external motivation for an unplanned purchase should increase with greater unplanned purchase consideration. On the other hand, we expect a low-impulsivity consumer to exhibit the opposite pattern, whereby the consumer tends to consider unplanned purchases for external motivations (e.g., "low price" or "forgotten need") and

becomes more likely to express internal motivations for unplanned purchases after completing earlier considerations. As a result, greater effort spent considering unplanned purchases should increase the likelihood that a low-impulsivity consumer will make an unplanned purchase to fulfill an internal shopping motivation, such as rewarding oneself for accomplishing external goals.

Thus, based on the mechanism of motivation balancing, we propose that greater effort spent considering unplanned purchases will lead to changes in the likelihood of internal versus external motivations for an unplanned purchase. Importantly, the concrete nature of in-store decision making (Lee and Ariely 2006) suggests that consumers will tend to perceive the consideration of unplanned purchases as progress toward their initially salient motivations or goals and initiate a balancing process whereby the likelihood of the opposing motivation type increases (Fishbach, Dhar, and Zhang 2006; Koo and Fishbach 2008). Furthermore, goal management theory suggests that perceived goal progress can occur even in the absence of a completed unplanned purchase because the mere thought or expectation of goal progress liberates people to pursue inconsistent goals in future choices (Fishbach and Dhar 2005; Zhang, Fishbach, and Dhar 2007). Hence, greater effort spent considering unplanned purchases (i.e., time or number of considerations; Hui, Huang, et al. 2013) should lead to opposing motivation patterns for high- and low-impulsivity consumers.

H2: The effect of greater cumulative unplanned purchase consideration on the likelihood of an internal versus external motivation for an unplanned purchase will be negative for a high-impulsivity consumer and positive for a low-impulsivity consumer.

Budget Focus Is a Boundary Condition of Unplanned Purchasing Motivation Dynamics

Next, we consider a boundary condition of the proposed motivation dynamics. Past studies provide evidence that monetary budget focus moderates changes in consumer motivation. Dhar and Simonson (1999) report that monetary constraints lead consumers to prefer to achieve the

greatest level on a single goal rather than a balance between different goals during sequential choices. Similarly, directing attention to monetary payment eliminates the buying momentum effect (i.e., higher likelihood of purchase following an initial purchase; Dhar, Huber, and Khan 2007). A unifying explanation for the moderating effect of budget focus on motivation dynamics is that attention to a budget creates a trade-off between pursuing a goal and spending a resource. This trade-off inhibits the perception of progress toward salient motivations or goals and increases the likelihood of consistent motivations across sequential choices (Laran and Janiszewski 2009).

The evidence that monetary budget focus is a boundary condition of motivation dynamics applies to in-store decision making because consumers can shop with or without a salient budget (Stilley, Inman, and Wakefield 2010; Van Ittersum, Pennings, and Wansink 2010). For example, given identical shopping goals, a consumer limited to spending $25 will be relatively more budget focused than a consumer with a budget of $50. In addition, consumers who engage in explicit budget tracking (e.g., using a smart shopping cart) can have a high budget focus regardless of their absolute budget (Van Ittersum et al. 2013). Thus a low trip budget or the use of budget tracking should increase the salience of a monetary budget and, according to sequential choice theory, hinder perceptions of progress toward satisfaction of a consumer's shopping motivations. As a result, we expect budget focus (i.e., a low trip budget or the use of budget tracking) to decrease the effect of unplanned purchase consideration on consumer motivations for unplanned purchases.

H3: Greater budget focus will reduce the impact of unplanned purchase consideration on the likelihood that an unplanned purchase is internally versus externally motivated.

Level of Buying Impulsivity Predicts Unplanned Purchasing Behaviors

Our hypothesis development concludes with applications of our conceptual framework to unplanned purchasing behaviors. First, we expect the interaction between the level of buying

impulsivity and unplanned purchase consideration to moderate the likelihood that a point-of-purchase message will stimulate an unplanned purchase. In particular, the fit principle proposes that consumers evaluate marketing stimuli more positively if a stimulus's attributes match their current goals (Lee and Higgins 2009). For example, Chandon, Wansink, and Laurent (2000) find that congruency between the benefit offered by a promotion (e.g., a gift or a price cut) and the hedonicity of a product has a positive impact on brand choice. In the context of retailer choice, Büttner, Florack, and Göritz (2015) find that consumers with an experiential as opposed to task-focused mindset rated nonmonetary promotions as more attractive than monetary promotions.

These fit effects provide evidence that a point-of-purchase message will be most likely to stimulate an unplanned purchase when it matches a consumer's in-store shopping motivations. Messages appealing to internal motivations like curiosity or personal interest (e.g., "Try Something New") should be most effective when internal motivations are salient. In contrast, messages related to price or other types of external motivations (e.g., "Low Price" or "Forgotten Need") should be most effective when external motivations are salient. Thus, in support of hypotheses 1 and 2, we predict that the interaction between buying impulsivity and unplanned purchase consideration will influence the likelihood that a point-of-purchase message will stimulate an unplanned purchase.

H4a: At the beginning of a trip, a high- as compared to low-impulsivity consumer will be more likely to make an unplanned purchase from a product display with an internally as opposed to an externally focused point-of-purchase message.

H4b: The effect of greater cumulative unplanned purchase consideration on the likelihood of an unplanned purchase from a product display with an internally as opposed to an externally focused point-of-purchase message will be negative for a high-impulsivity consumer and positive for a low-impulsivity consumer.

Second, we consider the effect of the interaction between the level of buying impulsivity and unplanned purchase consideration on consumers' relative spending for unplanned purchases (i.e., the price of the purchased item relative to the mean price of the product category). Past studies find that relative spending evolves throughout a shopping trip as a function of the pain of paying and of price salience (Sheehan and Van Ittersum 2018). Importantly, Sheehan and Van Ittersum (2018, p. 65) speculate that consumer impulsiveness should also influence spending patterns. Thus, building on hypothesis 1, we propose that, because of its relationship with internal and external unplanned purchasing motivations, the level of buying impulsivity will predict initial differences in a consumer's relative spending on an unplanned purchase at the beginning of a shopping trip. Then, building on hypothesis 2, greater unplanned purchase consideration should lead to opposing changes in relative spending on unplanned purchases for low- and high-impulsivity consumers.

At the beginning of a trip, a high-impulsivity consumer should be more likely to make a relatively higher-priced unplanned purchase because the salience of price is low as compared to the salience of internal motivations such as pleasure or exploration (Rook and Fisher 1995). In contrast, a low-impulsivity consumer should initially be more likely to make a relatively lower-priced unplanned purchase because the salience of price is high as compared to internal shopping motivations. For instance, Vohs and Faber (2007) find that low- as opposed to high- impulsivity consumers spend less money on impulse purchases. In addition, if unplanned purchase motivations change as consumers consider more unplanned purchases (hypothesis 2), the likelihood of making a high- versus low-priced unplanned purchase may also change within a shopping trip. For a high-impulsivity consumer, greater unplanned purchase consideration will lead to an increase in the salience of external motivations, such as price and the pain of paying (Prelec and Loewenstein 1998), and result in lower relative spending later in a trip. For a low-impulsivity consumer, greater

unplanned purchase consideration will lead to a decrease in the salience of external motivations, such as price and the pain of paying, and result in higher relative spending later in a trip.

H5a: At the beginning of a trip, a high- as compared to low-impulsivity consumer will exhibit higher relative spending on a given unplanned purchase.

H5b: The effect of greater cumulative unplanned purchase consideration on relative spending on a given unplanned purchase will be negative for a high-impulsivity consumer and positive for a low-impulsivity consumer.

STUDIES 1A & 1B: IN-STORE VIDEO TRACKING AND IN-STORE INTERCEPT STUDIES

The goal of Studies 1a and 1b is to provide evidence for hypotheses 1 and 2 in real-world grocery shopping settings. We conducted field studies using video tracking (Study 1a) and in-store intercept (Study 1b) methodologies to measure consumers' motivations for unplanned purchases.

Study 1a Design and Data Preparation

Two-hundred and fifty shoppers entering a medium-sized grocery store participated in exchange for a $5 gift card at the conclusion of the study. We first asked participants to complete an entrance survey that included their trip budget (Stilley, Inman, and Wakefield 2010) and planned purchases (Inman, Winer, and Ferraro 2009). Participants then donned a head-mounted video camera that recorded their field of vision, and began shopping. The camera allowed us to record the timing and number of unplanned purchase considerations during a shopping trip (i.e., a consideration occurs when a shopper visually examines a product category; Hui, Huang, et al. 2013). After checkout, an exit survey measured participants' buying impulsivity (9-item scale; Rook and Fisher 1995) and self-reported reasons for up to five unplanned purchases.

Overall, 237 participants (13 participants had incomplete video data) made 2,306 purchases, of which 837 were unplanned. Our data set comprises the 277 unplanned purchases for which participants reported a reason for purchase. Trained research assistants coded the video data for point-of-purchase behavior and product characteristics of all unplanned purchases including those without reasons for purchase. The coded data include the number of product considerations, trip time, duration of product consideration, number of product touches, use of coupons, presence of a promotional display, item purchase price, and category characteristics (i.e., hedonicity, refrigeration, in-store location). The only difference between unplanned purchases for which participants provided a reason for purchase and those for which they did not was that unplanned purchases with reasons were for more hedonic product categories ($t(835) = 2.68$, $p = .008$). Hence, we include category hedonicity in our analyses (Wakefield and Inman 2003). Web Appendix B also helps to address concerns regarding the use of video tracking by reporting nonsignificant differences in key survey variables for participants with and without the video camera.

The focal dependent variable was participants' self-reported motivations for unplanned purchases. We solicited these motivations with an open-ended question (i.e., "Why did you make this purchase?"). Each answer was coded for the presence of internal motivations (Yes = 1; No = 0) and external motivations (Yes = 1; No = 0) by two trained research assistants unaware of the hypotheses. Agreement between coders was 90% for internal motivations and 91% for external motivations; disagreements were resolved through discussion. We treated the 16 reasons coded as both internal and external motivations as internally motivated because consumers can perceive some external motivations as self-motivated (Holbrook 1994). Overall, participants were more likely to report external as opposed to internal motivations ($M_{external} = .77$; $M_{internal} = .29$; see Web Appendix C for a summary of consumers' self-reported motivations for unplanned purchases).

To test hypotheses 1 and 2, we regressed purchase motivation on buying impulsivity, the count of unplanned category displays considered (i.e., "unplanned purchase consideration"), the interaction between impulsivity and unplanned purchase consideration, and covariates for the number of planned purchases, category hedonicity, and category dummy variables. The model predicted the likelihood that an unplanned purchase was internally as opposed to externally motivated (Internal = 1; External = 0) using a hierarchical logistic regression model with individual intercepts drawn separately and independently for each participant in the study. All continuous variables were mean-centered. We summarize the main results below and Web Appendices D–F report summary statistics, correlation tables, and full result tables for all studies.

Study 1a Results

As expected, there was a negative interaction between buying impulsivity and unplanned purchase consideration ($\beta = -.1750$, $t(135) = -3.23$, $p = .002$; see Figure 2). In support of hypothesis 1, a spotlight test at the first unplanned purchase consideration reveals that impulsivity had a positive effect on the likelihood of an internal versus external motivation for an unplanned purchase ($\beta = 1.0114$, $t(135) = 3.36$, $p = .001$). We then used the Johnson-Neyman "floodlight" technique (Spiller et al. 2013) to identify the ranges of impulsivity (M = 2.33, SD = .75, min = 1.00, max = 4.22) for which the simple effect of unplanned purchase consideration was significant. In support of hypothesis 2, there was a negative effect of unplanned purchase consideration on purchase motivation when impulsivity is greater than 2.99 ($\beta = -.1750$, $t(135) = -1.99$, $p < .05$) and a positive effect when impulsivity is less than 2.04 ($\beta = .07702$, $t(135) = 1.98$, $p < .05$).

[INSERT FIGURE 2 ABOUT HERE]

We support our results with several analyses. Web Appendix G reports consistent findings when unplanned purchase consideration is the time spent considering unplanned purchases and,

demonstrating the specificity of our results to unplanned behaviors, nonsignificant findings when we use the time spent considering *planned* purchases. We also provide evidence that a low trip budget is a boundary condition of motivation balancing (hypothesis 3) and that the level of buying impulsivity predicts relative spending patterns (hypotheses 5a and 5b). Web Appendix H describes a within-subject contrast-score analysis (Spiller et al. 2013, p. 285) that includes individual fixed effects. We find that the likelihood of a within-participant change in motivations for unplanned purchases increases with greater unplanned purchase consideration and, as expected, the level of buying impulsivity predicts the direction of change in motivations for unplanned purchases.

Study 1b Design and Data Preparation

We conducted a point-of-purchase intercept study in a different grocery store to address the limitation of Study 1a to consumers' reports of their purchase motivations at the conclusion of a shopping trip. An experimenter positioned inside the store approached individual consumers immediately after a single purchase during their shopping trips. In total, 108 consumers agreed to participate, of which 79 had just made an unplanned purchase (i.e., unplanned at the category and brand level; Cobb and Hoyer 1986). Participants first reported their reason for the purchase and then their agreement or non-agreement with a two-item buying impulsivity scale (i.e., "I often buy things spontaneously" and "I like to rely on my gut feelings"). As in Study 1a, two trained coders evaluated whether the reasons for purchase represented internal or external motivations. Agreement between coders was 95% and 92% and they addressed disagreements through discussion. We measured goal progress as the number of products in each participant's cart or basket (i.e., product count) at the time of the observed purchase and recorded the product category.

Purchase motivation (Internal = 1; External = 0) was regressed on the main effects and all interactions between buying impulsivity, product count, and a purchase type contrast code

(Unplanned Purchase = 1; Planned Purchase = −1), with category hedonicity and category dummy variables included as covariates. We used a logistic regression, and all continuous variables were mean-centered. There was a three-way interaction between impulsivity, product count, and purchase type (β = −.3820, Chi-Sq(93) = 5.32, p = .02). As expected, spotlight analyses showed that the two-way interaction between buying impulsivity and product count was negative for unplanned purchases (β = −.4420, Chi-Sq(93) = 8.34, p = .004) and nonsignificant for planned purchases (β = .3220, Chi-Sq(93) = 1.26, p = .26). In support of hypothesis 1, a spotlight test within only the unplanned purchases found that impulsivity had a positive effect on the likelihood of internal versus external motivations when the product count was zero (β = 1.5393, Chi-Sq(93) = 8.02, p = .005). Then, in support of hypothesis 2, floodlight analysis within only the unplanned purchases found a negative simple-simple effect of product count when impulsivity (M = 3.95, SD = 1.02, min = 1.00, max = 5.00) is greater than 4.25 (β = −.1903, Chi-Sq(93) = 3.85, p < .05) and a positive effect when impulsivity is less than 3.11 (β = 3.224, Chi-Sq(93) = 3.86, p < .05).

Studies 1a and 1b Discussion

Studies 1a and 1b provide support for hypotheses 1 and 2 in two different grocery stores. The video tracking study (Study 1a) found that high-impulsivity consumers have stronger internal motivations that decrease with greater unplanned purchase consideration and, in contrast, low-impulsivity consumers have stronger external motivations that decrease with greater unplanned purchase consideration. Study 1b enhances the validity of our findings by measuring motivations at the point of purchase. This addresses concerns that after checkout consumers may inaccurately report their motivations for unplanned purchases. We also find that motivation dynamics manifest only for unplanned (vs. planned) behaviors. Thus, these studies use complementary methods to provide real-world evidence that unplanned purchasing motivations vary within a shopping trip.

STUDIES 2A & 2B: SHOPPING EXPERIMENTS WITH MANIPULATED BUDGET FOCUS

The primary purpose of Studies 2a and 2b is to strengthen the internal validity of our evidence for hypotheses 1 and 2 by using online experiments to randomize the presentation order of product categories and the solicitation of motivations for unplanned purchases. The studies also test for convergence between open-ended and scale-based motivation measurement. In addition, to investigate the boundary condition of budget focus (hypothesis 3), Study 2a manipulates explicit trip budget and Study 2b manipulates budget focus without varying the actual budget.

Study 2a Design and Data Preparation

Seventy-five undergraduate students participated in this study for course credit. All participants received the same six-item shopping list and either a regular or a constrained budget ($50 vs. $25). The regular budget allowed participants to make an unplanned (i.e., non-list) purchase from each product category in addition to the six items on their list and the constrained budget was enough to purchase the list items and two or more non-list items. Participants were free to navigate between 18 grocery product categories presented in a random order (adapted from a national online grocery store; see Web Appendix I for an example category display). We created an incentive-compatible study design by entering participants into a lottery to receive their chosen groceries if they stayed under the assigned budget while purchasing all of the shopping list items.

After checking out, participants saw their non-list purchases one at a time in a random order and responded to the open-ended prompt: “Why did you make this purchase?” As in Studies 1a and 1b, two trained research assistants coded the responses for internal (90% agreement) and external motivations (92% agreement) and resolved disagreements through discussion. Internal

motivations were more frequent than external motivations ($M_{internal}$ = .58; $M_{external}$ = .43). An exit survey measured buying impulsivity (Rook and Fisher 1995) and included an attention check (i.e., "Select one for this option"). Finally, we recorded unplanned purchase consideration as the count of the non-list categories viewed by each participant and added category hedonicity to the data.

Our final data set consisted of 189 non-list purchases made by 74 participants (excluding one participant who reported confusion with the study, i.e., "I did not purchase these items"). Purchase motivation (Internal = 1; External = 0) was regressed on the main effects and all interactions between buying impulsivity, unplanned purchase consideration, and trip budget with category hedonicity and category dummy variables as covariates. The model was a hierarchical logistic regression with individual intercepts drawn for each participant. All continuous variables were mean-centered and the trip budget was contrast coded (Regular = 1; Constrained = −1).

Study 2a Results

As expected, there was a three-way interaction between the level of buying impulsivity, unplanned purchase consideration, and trip budget ($\beta = -.2265$, $t(113) = -3.14$, $p = .002$; see Figure 3). In support of hypothesis 3, spotlight tests reveal that the interaction between impulsivity and unplanned purchase consideration is negative in the regular budget condition ($\beta = -.4113$, $t(113) = -4.95$, $p < .0001$) and nonsignificant in the constrained budget condition ($\beta = .04171$, $t(113) = .37$, $p = .71$). In support of hypothesis 1, a spotlight test in the regular budget condition finds that impulsivity has a positive effect on the likelihood of internal versus external motivations at the first unplanned purchase consideration ($\beta = 2.256$, $t(113) = 3.81$, $p = .0002$). In support of hypothesis 2, floodlight analysis in the regular budget condition finds a negative effect of unplanned purchase consideration when impulsivity (M = 2.71, SD = .77, min = 1.00, max = 4.56) is greater than 3.26 ($\beta = -.1415$, $t(113) = -1.99$, $p < .05$) and a positive effect when impulsivity is

less than 2.64 ($\beta = .1217$, $t(113) = 2.04$, $p < .05$). Web Appendices J and K report consistent results from a logistic regression with individual fixed effects and a within-subject contrast-score analysis.

[INSERT FIGURE 3 ABOUT HERE]

Study 2b Design and Data Preparation

Seventy-nine undergraduate students participated in this study for course credit. The procedure was incentive-compatible and identical to that of Study 2a except for the following changes. First, all participants received the regular budget ($50) to hold the explicit trip budget constant. We then randomly assigned half of the participants into a "budget focus" condition and instructed this group to "use the shopping list to keep track of [their] budget." Second, the dependent variable was six scale items to measure unplanned purchase motivations (see next paragraph). Third, we measured impulsivity 20 minutes after soliciting the purchase motivations.

Our data set consisted of 417 non-list purchases made by 76 participants (excluding three participants who failed the attention check). Similar to Chandon, Wansink, and Laurent (2000), we used multiple items to measure purchase motivations. The internal motivation items were: "I thought I would enjoy the product" and "I was interested in the product." The external motivation items were: "To save money," "The price of the product," "The product will help me achieve a practical goal," and "I needed to purchase the product." Factor analysis revealed two factors with Eigenvalues greater than one, reflecting the internal versus external distinction and accounting for 63% of the variation in the items. We created the dependent variable (purchase motivation) by subtracting the average of the external motivation items from the average of the internal motivation items (1 = Strongly Disagree; 7 = Strongly Agree). Thus positive values indicate that a purchase was more internally than externally motivated and, as in Study 2a, participants reported greater internal than external purchase motivations ($M_{motivation} = 2.07$; $t(416) = 21.98$, $p < .0001$).

The purchase motivation measure was regressed on the main effects and all interactions between buying impulsivity, unplanned purchase consideration, and budget focus (Regular Focus = 1; Budget Focus = −1) with category hedonicity and category dummy variables included as covariates. The model predicted the likelihood that a consumer expressed greater internal versus external purchase motivations using a hierarchical linear regression as in Study 2a. Buying impulsivity, unplanned purchase consideration, and category hedonicity were mean-centered.

Study 2b Results

As expected, there was a three-way interaction between buying impulsivity, unplanned purchase consideration, and budget focus ($\beta = -.07016$, $t(326) = -3.30$, $p = .001$). In support of hypothesis 3, spotlight tests reveal that the interaction between impulsivity and unplanned purchase consideration is negative in the regular focus condition ($\beta = -.1202$, $t(326) = -3.13$, $p = .002$) and nonsignificant in the budget focus condition ($\beta = .02007$, $t(326) = .84$, $p = .40$). In support of hypothesis 1, a spotlight test in the regular focus condition finds that impulsivity has a positive effect on the likelihood of internal versus external motivations at the first unplanned purchase consideration ($\beta = .6381$, $t(326) = 2.34$, $p = .02$). In support of hypothesis 2, floodlight analysis in the regular focus condition finds a negative effect of unplanned purchase consideration when impulsivity (M = 2.36, SD = .82, min = 1.00, max = 4.20) is greater than 2.64 ($\beta = -.04732$, $t(326) = -2.00$, $p < .05$) and a positive effect when impulsivity is less than 1.83 ($\beta = .05248$, $t(326) = 1.97$, $p < .05$). Web Appendices L and M report consistent results from analyses with individual fixed effects, with alternative dependent variables, and with the contrast-score methodology.

Studies 2a and 2b Discussion

Studies 2a and 2b increase the internal validity of our evidence for hypotheses 1 and 2. The randomization of category order and motivation solicitation addresses the limitations related to the

static organization of brick-and-mortar stores and the possibility of a demand effect in Study 1a. Study 2b replicates our findings using a scale-based dependent variable and temporal separation of the impulsivity scale. Furthermore, the boundary conditions of budget focus distinguish our results from a purchase timing effect where consumers act on motivations at different times in a trip. This is especially notable in Study 2b because budget focus had a nonsignificant impact on total consideration count and shopping time. If the mechanism were purchase timing, motivation dynamics would persist in the budget focus condition. Next, Studies 3, 4, and 5 use new dependent variables to investigate the process of motivation balancing and unplanned purchasing behaviors.

STUDY 3: SHOPPING EXPERIMENT WITH MOTIVATION SALIENCE INTERCEPT

The purpose of Study 3 is to provide evidence consistent with the underlying mechanism of motivation balancing by measuring motivation salience within a trip. Importantly, we expect changes in the salience of internal versus external motivations even in the absence of a purchase.

Study 3 Design and Data Preparation

An academic research panel (Prolific) recruited 54 adults to participate in an online study for payment. The procedure followed the regular focus condition in Study 2b except for the following changes. First, instead of measuring reasons for purchases at the end of the trip, we displayed a six-item motivation scale at a random point within the shopping trip (“At this exact moment, what are your shopping priorities?”). The scale items were adapted from the motivation scale in Study 2b. The dependent variable was the difference between the average of the internal motivation items and that of the external motivation items (1 = Strongly Disagree; 7 = Strongly Agree); with a positive score indicating greater internal versus external motivation. Second, the

store included nine product categories from Study 2b, and participants received a three-item list. Third, we tracked unplanned purchase consideration as both the number of displays and the amount of time spent viewing non-list displays. Fourth, we measured buying impulsivity after checkout.

Our data set consisted of 51 in-store intercepts (excluding three participants who failed the same attention check as in Study 2a). Using a linear regression, the scale-based motivation salience dependent variable was regressed on buying impulsivity, unplanned purchase consideration, and their interaction. Buying impulsivity and unplanned purchase consideration were mean-centered.

Study 3 Results

As expected, there was a negative two-way interaction between buying impulsivity and unplanned purchase consideration ($\beta = -.4193$, Chi-Sq(47) = 13.20, $p = .0003$). A spotlight test when unplanned purchase consideration was zero revealed a positive effect of impulsivity on the likelihood of internal versus external motivations at the beginning of a trip ($\beta = .7337$, Chi-Sq(47) = 5.14, $p = .02$). Then, floodlight analysis identified the ranges of impulsivity (M = 2.16, SD = .99, min = 1.00, max = 5.00) for which unplanned purchase consideration had a significant effect. We found a negative effect of unplanned purchase consideration when impulsivity is greater than 3.24 ($\beta = -.3429$, Chi-Sq(47) = 3.86, $p < .05$) and a positive effect when impulsivity is less than 1.98 ($\beta = .1939$, Chi-Sq(47) = 3.90, $p < .05$). Web Appendix N reports consistent results with alternative measurements of the dependent variable and of unplanned purchase consideration.

Study 3 Discussion

Study 3 provides evidence consistent with the proposed process of motivation balancing. Complementing our within-subjects analyses, we find that unplanned purchase consideration leads to changes in motivation salience independent of purchasing behavior (Lee and Ariely 2006). Next, we test for the influence of the level of buying impulsivity on unplanned purchasing behaviors.

STUDY 4: SHOPPING EXPERIMENT WITH IN-STORE MARKETING

The purpose of Study 4 is to provide behavioral evidence that the level of buying impulsivity influences unplanned purchasing motivations. To do so, we manipulated the presence of internal (e.g., “Try Something New”) versus external (e.g., “Low Price” or “Forgotten Need”) in-store messages. The reason to manipulate messages is to test the proposed motivation dynamics with repeated purchase consideration observations for each shopper. Based on the fit principle (Lee and Higgins 2009), we expect the interaction between impulsivity and unplanned purchase consideration to moderate the effectiveness of the messages at stimulating unplanned purchases.

Study 4 Design and Data Preparation

An academic research panel (Prolific) recruited 50 adults in two phases to participate in an online study for payment. Our final data set consisted of 918 non-list category visits, which led to 226 purchases made by 48 participants (excluding two participants who purchased all categories and exceeded the budget). The number of observations per participant (i.e., 12 or more) is larger than in our previous studies because the dependent variable is the conversion of a non-list consideration to purchase. The methodology followed Study 2a except that participants received the regular $50 budget, the store displayed motivation messages (see next paragraph) and tracked unplanned purchase consideration in time, and the exit survey omitted the motivation questions.

Each non-list category randomly displayed one of six messages or no message above the items (see Web Appendix O). Two messages appealed to internal motivations (“Experience the Difference”; “Try Something New”), two appealed to price-based external motivations (“Low Price”; “Save Money”), and two appealed to non-price external motivations (“Forgotten Need”;

"Best Quality"). We repeated the no message option four times so that each non-list category had a 40% chance of appearing without a message. A pretest with a different set of participants (N = 77) evaluated whether the messages appealed to internal motivations (i.e., have fun; find interesting products), price-based motivations (i.e., save money; find good deals), or non-price external motivations (i.e., get things done; be task-focused). Participants rated the internal messages as more related to internal motivations than the price or non-price external messages (both *p*-values < .0001). In contrast, participants rated the non-price external messages as more related to external motivations than the internal messages and the price-based messages as more related to price than the internal or non-price external messages (all *p*-values < .0001).

We regressed the purchase of a non-list category (Yes = 1; No = 0) on the main effects and all interactions between buying impulsivity, unplanned purchase consideration, and a signage contrast code (Internal = 2, None = 0, Price-Based and Non-Price External = −1) with category hedonicity, category dummy variables, and participant fixed effects as covariates. The model was a logistic regression and the independent variables were mean-centered.

Study 4 Results

As expected, there was a three-way interaction between buying impulsivity, unplanned purchase consideration, and the signage contrast code ($\beta = -.01253$, $t(852) = -4.44$, $p < .0001$; see Figure 4). Consistent with hypothesis 4a, a spotlight test at the first unplanned purchase consideration found a positive interaction between impulsivity and the signage contrast code ($\beta = .7843$, $t(852) = 4.58$, $p < .0001$). We then used floodlight analysis to identify the ranges of impulsivity (M = 2.35, SD = .81, min = 1.11, max = 4.11) for which the simple-simple effect of the signage contrast code was significant at the first unplanned purchase consideration. In support of hypothesis 4a, internal as opposed to external messages were more likely to stimulate an

unplanned purchase for consumers with impulsivity greater than 2.79 (β = .3230, t(852) = 1.96, $p < .05$) and external as opposed to internal messages were more likely to stimulate an unplanned purchase for consumers with impulsivity less than 1.95 (β = −.3514, t(852) = −1.99, $p < .05$).

We then identified the ranges of impulsivity for which the interaction between unplanned purchase consideration and the signage contrast code was significant. In support of hypothesis 4b, there was a negative interaction when impulsivity is greater than 2.51 (β = −.00444, t(852) = −1.99, $p < .05$) and a positive interaction when impulsivity is less than 1.81 (β = .004577, t(852) = 1.97, $p < .05$). Finally, we tested for a reversal in the effect of the interaction between impulsivity and the signage contrast code. Floodlight analysis with unplanned purchase consideration in seconds (M = 68.3, SD = 53.04, min = 0, max = 273) found a negative two-way interaction when unplanned purchase consideration is 87 seconds or greater (β = −.3058, t(852) = −2.00, $p < .05$).

[INSERT FIGURE 4 ABOUT HERE]

Web Appendix P reports consistent findings when we measure unplanned purchase consideration as a display count variable, when we use a hierarchical logistic regression, and when we dummy-code the messages. In addition, Web Appendix Q describes a within-subject analysis using regression coefficient analysis. We find that the level of impulsivity predicts the direction of *within* shopper change in the effectiveness of internal versus external motivation messages.

Study 4 Discussion

Study 4 provides evidence that the interplay between buying impulsivity and unplanned purchase consideration influences when people make unplanned purchases during a shopping trip. At the beginning of a trip, the level of buying impulsivity predicted differences in the effectiveness of internal as opposed to external motivation messages at stimulating unplanned purchases. Then, consistent with motivation balancing, the interaction between impulsivity and unplanned purchase

consideration moderated message effectiveness. These findings provide behavioral support for our conceptual framework and illustrate its managerial application. We find that displaying an internal motivation message at the beginning of a trip to a high- as opposed to low-impulsivity consumer (i.e., one standard deviation above and below the sample mean) increases the predicted likelihood of an unplanned purchase over 40% in absolute terms and over 200% relatively. However, later in a trip, a high-impulsivity consumer can surprisingly become more likely to purchase from a display with an external as opposed to an internal message. Next, building on this behavioral evidence, Study 5 explores how impulsivity influences choices of unplanned purchases within a category.

STUDY 5: SHOPPING EXPERIMENT WITH RELATIVE SPENDING

The purpose of Study 5 is to address how the interplay between buying impulsivity and unplanned purchase consideration influences the type of unplanned purchases people make during a shopping trip. We focus on relative spending (Sheehan and Van Ittersum 2018) as a proxy for internal and external unplanned purchasing motivations. A high-priced unplanned purchase suggests that the salience of price is low as compared to internal motivations such as pleasure or exploration (Rook and Fisher 1995). In contrast, a low-priced unplanned purchase suggests a high salience of external motivations such as price and the pain of payment (Prelec and Loewenstein 1998). We expect high- as compared to low-impulsivity consumers to exhibit greater relative spending on unplanned purchases at the beginning of a trip. Then, greater cumulative unplanned purchase consideration should lead to a decrease in relative spending on unplanned purchases for high-impulsivity consumers and an increase in relative spending for low-impulsivity consumers.

Study 5 Design and Data Preparation

An academic research panel (Prolific) recruited 100 adults to participate in an online study for payment. The study followed the regular budget condition in Study 2a with two changes. First, we updated each non-list category to create a dispersion of prices. Similar to Sheehan and Van Ittersum (2018, Study 1), each category had one high-, one medium-, and one low-priced item. Second, the exit survey omitted the purchase motivation questions. Our data set consisted of 514 non-list purchases from the 96 participants who made at least one non-list purchase. We regressed the price (M = 2.75, SD = 1.05, min = .89, max = 8.66) of a non-list purchase on the main effects and interaction between buying impulsivity and unplanned purchase consideration with hedonicity and category dummy variables included as covariates. The model was a hierarchical linear regression with mean-centered continuous variables and intercepts drawn for each participant.

Study 5 Results

As expected, there was a negative two-way interaction between buying impulsivity and unplanned purchase consideration ($\beta = -.02376$, $t(404) = -4.21$, $p < .0001$; see Figure 5). In support of hypothesis 5a, a spotlight test at the first unplanned purchase consideration found a positive effect of impulsivity ($\beta = .2416$, $t(404) = 2.99$, $p = .003$) indicating that greater impulsivity was related to higher relative spending on an unplanned purchase. Floodlight analysis then identified the ranges of impulsivity (M = 2.29, SD = .81, min = 1.00, max = 4.56) for which the overall effect of unplanned purchase consideration was significant. In support of hypothesis 5b, unplanned purchase consideration has a negative effect when impulsivity is greater than 3.05 ($\beta = -.01087$, $t(404) = -1.98$, $p < .05$) and a positive effect when impulsivity is less than 2.24 ($\beta = .008859$, $t(404) = 1.99$, $p < .05$). Web Appendix R reports consistent findings with additional measures of the relative spending dependent variable, with unplanned purchase consideration measured in time, and with models that incorporate individual fixed effects.

[INSERT FIGURE 5 ABOUT HERE]

Study 5 Discussion

Study 5 provides evidence that the interplay between buying impulsivity and unplanned purchase consideration influences the salience of consumers' internal and external motivations as seen through the types of unplanned purchases made during a shopping trip (i.e., high- vs. low-priced purchases). Consistent with our predictions, the level of buying impulsivity predicted initial differences in relative spending for unplanned purchases and moderated the change in relative spending as unplanned purchase consideration increases. These findings extend the literature on relative spending (Sheehan and Van Ittersum 2018) to unplanned purchasing and demonstrate that people predictably purchase different types of products in different phases of a shopping trip.

GENERAL DISCUSSION

While motivation is a fundamental and dynamic aspect of consumer behavior (Hoyer, MacInnis, and Pieters 2017), extant studies tend to treat all unplanned purchases as similar and consistent behaviors (Bell, Corsten, and Knox 2011; Gilbride, Inman, and Stilley 2015; Hui, Huang, et al. 2013; Inman, Winer, and Ferraro 2009). Therefore, to address *why* unplanned purchases occur as opposed to whether a given purchase is unplanned or not, we investigated the dynamics of consumers' internal versus external motivations for unplanned purchases. As seen in our summary of results (Table 2), two field studies and five online experiments provide evidence that the salience of consumer motivations for unplanned purchases varies within a shopping trip.

[INSERT TABLE 2 ABOUT HERE]

Theoretical Contributions

Our first theoretical contribution is distinguishing between disparate internal and external motivations for unplanned purchasing. Because of this distinction, we are able to provide evidence that the level of buying impulsivity predicts differences in the salience of consumers' unplanned purchasing motivations. This insight explains why past research finds that buying impulsivity is a significant predictor of impulse purchasing (Amos, Holmes, and Keneson 2014; Iyer et al. 2019), yet it also has a nonsignificant relationship with the overall incidence of unplanned purchasing (Hui, Huang, et al. 2013; Kollat and Willett 1967; Sciandra, Inman, and Stephens 2019).

Second, our formulations of the dynamic patterns of motivations for unplanned purchases contribute to understanding consumer self-regulation across sequential choices in the marketplace. Consistent with a mechanism of motivation balancing, we find that the salience of internal versus external motivations for unplanned purchases can increase or decrease within a shopping trip. For example, high-impulsivity consumers tend to exhibit a decreasing likelihood of acting on internal motivations for unplanned purchases. This finding provides real-world evidence that engaging in an internally motivated activity satisfies internal motivations and increases the subsequent likelihood of externally motivated actions (Inzlicht, Schmeichel, and Macrae 2014).

Furthermore, the manipulated boundary condition of budget focus (Studies 2a and 2b) and the within-trip measurement of motivation salience (Study 3) differentiate our evidence consistent with motivation balancing from alternative explanations. The stability of consumers' motivations when facing budget constraints (i.e., high budget focus) is consistent with evidence that perceived goal progress is necessary for motivation change (Dhar and Simonson 1999; Fishbach and Dhar 2005). If consumers were simply selecting different products at different points in a trip, then the purchase timing patterns would persist despite a high budget focus. In addition, the changes in motivation salience distinguish the proposed balancing process from a product type licensing

effect (Khan and Dhar 2006). Whereas past studies report inconsistent support for a licensing effect whereby the purchase of a utilitarian product leads to the purchase of a hedonic product (Dhar and Simonson 1999; Hui, Bradlow, and Fader 2009), we find that greater effort spent considering unplanned purchases leads to changes in shopping motivations independent of product type. Thus, building on Lee and Ariely's (2006) two-stage shopping framework, our studies help to advance our understanding of shopper motivation beyond stable trip-level differences in favor of dynamic, goal-based models of the in-store consumer journey (Lee et al. 2018; Lemon and Verhoef 2016).

Third, Study 4 finds that the proposed interplay between buying impulsivity and unplanned purchase consideration moderates the effectiveness of in-store marketing. This finding contributes a novel in-store example of a promotional fit effect (Chandon, Wansink, and Laurent 2000) and provides additional evidence consistent with the mechanism of motivation balancing. In particular, the observed patterns of unplanned purchasing likelihood match the in-store dynamics of self-reported motivations measured in Studies 1–3. Thus, building on the fit effect literature (Lee and Higgins 2009), we provide behavioral evidence that the salience of consumer motivations for unplanned purchases dynamically change within a single shopping trip. Furthermore, we advance the shopper marketing literature by demonstrating that matching in-store stimuli to consumer motivations may stimulate incremental unplanned purchasing (Inman, Winer, and Ferraro 2009).

Fourth, Study 5, as well as our supplementary analysis of Study 1a in Web Appendix G, provide evidence that buying impulsivity predicts differences in relative spending on unplanned purchases. Whereas past studies on shopping dynamics focus on product characteristics at the category level (Gilbride, Inman, and Stilley 2015; Hui, Huang, et al. 2013), we find that consumers predictably purchase different types of items in different phases of a trip. This provides evidence that investigating behavior at the product level reveals novel in-store dynamics. In addition, the

effect of the level of buying impulsivity on relative spending connects our research to studies on budget and non-budget shoppers (Van Ittersum et al. 2013). The relative spending at the beginning of a trip suggest that high-impulsivity shoppers initially experience a low pain of paying whereas low-impulsivity shoppers initially experience a high pain of paying (Prelec and Loewenstein 1998). Hence, we answer the need to identify constructs that influence relative spending and confirm the dynamic nature of in-store spending patterns (Sheehan and Van Ittersum 2018).

Managerial Implications

The differences in unplanned purchasing motivations at the beginning and end of shopping trips is an opportunity to tailor in-store tactics to distinct shopper types. In brick-and-mortar and online grocery stores, the displays at a store entrance and exit (or landing and checkout pages) could appeal to both internal and external motivations for unplanned purchases (e.g., hedonic *and* instrumental motives; see Table 1). However, stores that primarily cater to one type of shopping motivation (e.g., task-oriented vs. recreational stores; Kaltcheva and Weitz 2006) can implement a linear shift in merchandising tactics within the store. For example, a task-oriented or low-price image store should merchandise frequently purchased categories and lower-priced items at the beginning of a shopping trip and then display new or experiential products and higher-priced items at the end of a shopping trip to appeal to low-impulsivity shoppers increasing internal motivations. This shift in merchandising is especially relevant to online shopping where some websites tend to attract task-oriented shopping trips while others may be more likely to attract recreational trips. For example, a shift from external to internal motivations would appeal to online grocery shoppers on routinized habit journeys (Lee et al. 2018). In contrast, websites that often attract entertainment journeys (e.g., Etsy) should promote internal motivations at the beginning of a trip. Our framework thus helps to manage the retail environment *within* a trip in addition to the overall store level.

Consumers' motivations for unplanned purchases also support the use of non-price tactics to stimulate incremental spending. For example, in-store displays could feature internal motivation messages (e.g., "Experience the Difference" or "Try Something New") that appeal to consumers' hedonic and experiential motivations for unplanned purchases (Holbrook 1984). In addition, the patterns of price and non-price external motivations across our studies suggests that marketers can promote utilitarian benefits without using price cuts (e.g., "Forgotten Need" or "Best Quality"). Our studies also demonstrate methods to solicit and categorize consumers' reasons for unplanned purchases in offline and online shopping settings. For example, we measure motivations using pre- and post-checkout surveys, in-store intercepts, and scale-items during and after an online shopping trip. Gathering purchase motivation data across store formats or locations would allow a retailer to customize their promotional mix (MSI 2018). We recommend that marketers create and promote in-store messages based on the content and frequency of their customers' unplanned purchasing motivations. For example, the retailer in Study 1a should display external motivation messages (i.e., price, forgotten needs) at twice the rate of internal motivations (based on Web Appendix C).

Furthermore, marketers can use in-store technology (e.g., digital displays, mobile shopping applications; Hui, Inman, et al. 2013; Roggeveen, Nordfält, and Grewal 2016; Shankar et al. 2016) and online communications to implement targeted dynamic promotional strategies. Studies 4 and 5 provide evidence that balancing appeals to internal versus external purchase motivations will increase the relevance of in-store marketing, resulting in greater total unplanned purchasing. For example, mobile shopping applications can split a shopping trip in half (based on either time or number of product displays) and test the effectiveness of appealing to internal motivations (e.g., experiential messages and relatively high-priced items) before external motivations (e.g., price-based or utilitarian messages and relatively low-priced items) or vice-versa. This motivation

balancing strategy would be especially easy to implement with online shopping by manipulating the order of product category headings or tags on individual items (e.g., “new item” versus “top seller”). Our conceptual framework and empirical findings provide evidence that grouping similar promotional appeals across categories will better match shoppers’ motivation patterns as compared to sequentially alternating between the promotion of hedonic and utilitarian products (Khan and Dhar 2006). In other words, we recommend that dynamic retail communication strategies display consistent message types in the short term and achieve message diversity over a complete trip. Furthermore, going beyond predetermined balancing strategies, technology in brick-and-mortar, online, and mobile retailing suggests that artificial intelligence systems can infer the type of initial shopping motives and then display personalized messages throughout a trip (Lee et al. 2018). Overall, our research supports the idea that data and tools to target shoppers’ dynamic motivations can help to fulfill the goal of delighting the digitally connected retail customer (MSI 2018).

Limitations and Future Research

The limitations of this research present opportunities for further research, both into the reasons why consumers make unplanned purchases and into the consumer welfare implications of motivation dynamics. Future studies should investigate other variables, such as shopping trip purpose (e.g., fun vs. work; Babin, Darden, and Griffin 1994), that may influence the dynamics of in-store decision making. Another opportunity is to further investigate the underlying process of motivation balancing and its other possible boundary conditions (e.g., time constraints; Park, Iyer, and Smith 1989). Finally, from a consumer welfare perspective, researchers may consider how the adaptive nature of motivation balancing phenomena (Inzlicht, Schmeichel, and Macrae 2014) may help consumers avoid unwanted impulse purchases (Rook 1987) and whether facilitating progress towards opposing motivations can enhance the retail experience (Lemon and Verhoef 2016).

REFERENCES

Amos, Clinton, Gary R. Holmes, and William C. Keneson (2014), "A Meta-Analysis of Consumer Impulse Buying," *Journal of Retailing and Consumer Services*, 21(2), 86–97.

Babin, Barry J., William R. Darden, and Mitch Griffin (1994), "Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value," *Journal of Consumer Research*, 20(4), 644–56.

Baxendale, Shane, Emma K. Macdonald, and Hugh N. Wilson, "The Impact of Different Touchpoints on Brand Consideration, *Journal of Retailing*, 92(2), 235–53.

Beatty, Sharon E. and M. Elizabeth Ferrell (1998), "Impulse Buying: Modeling Its Precursors," *Journal of Retailing*, 74(2), 169–91.

Bell, David R., Daniel Corsten, and George Knox (2011), "From Point of Purchase to Path to Purchase: How Preshopping Factors Drive Unplanned Buying," *Journal of Marketing*, 75(1), 31–45.

Block, Lauren G. and Vicki Morwitz G. (1999), "Shopping Lists as an External Memory Aid for Grocery Shopping: Influences on List Writing and List Fulfillment," *Journal of Consumer Psychology*, 8(4), 343–75.

Büttner, Oliver B., Arnd Florack, and Anja S. Göritz (2015), "How Shopping Orientation Influences the Effectiveness of Monetary and Nonmonetary Promotions," *European Journal of Marketing*, 49(1/2), 2–21.

Chandon, Pierre, Brian Wansink, and Gilles Laurent (2000), "A Benefit Congruency Framework of Sales Promotion Effectiveness," *Journal of Marketing*, 64(4), 65–81.

Choi, Jinhee and Ayelet Fishbach (2011), "Choice as an End Versus a Means," *Journal of Marketing Research*, 48(3), 544–54.

Cobb, Cathy, J. and Wayne D. Hoyer (1986), "Planned Versus Impulse Purchase Behavior," *Journal of Retailing*, 62(4), 384–409.

Dhar, Ravi and Itamar Simonson (1999), "Making Complementary Choices in Consumption Episodes: Highlighting Versus Balancing," *Journal of Marketing Research*, 36(1), 29–44.

Dhar, Ravi, Joel Huber, and Uzma Khan (2007), "The Shopping Momentum Effect," *Journal of Marketing Research*, 44(3), 370–78.

Fishbach, Ayelet and Ravi Dhar (2005), "Goals as Excuses or Guides: The Liberating Effect of Perceived Goal Progress on Choice," *Journal of Consumer Research*, 32(3), 370–77.

Fishbach, Ayelet, Ravi Dhar, and Ying Zhang (2006), "Subgoals as Substitutes or Complements: The Role of Goal Accessibility," *Journal of Personality and Social Psychology*, 91(2), 232–42.

Gilbride, Timothy, J. Jeffrey Inman, and Karen M. Stilley (2015), "The Role of Within-Trip Dynamics in Unplanned Versus Planned Purchase Behavior," *Journal of Marketing*, 79(3), 57–73.

Holbrook, Morris B. (1994), "The Nature of Customer Value," in *Service Quality: New Directions in Theory and Practice*, R.T. Rust and R.L. Oliver, eds. Thousand Oaks, CA: Sage Publications, 21–71.

Hoyer, Wayne D. (1984), "An Examination of Consumer Decision Making for a Common Repeat Purchase Product," *Journal of Consumer Research*, 11(3), 822–29.

Hoyer, Wayne D., Deborah J. MacInnis, and Rik Pieters (2017), *Consumer Behavior*, South-Western College Pub.

Hui, Sam K., Eric T. Bradlow, and Peter S. Fader (2009), "Testing Behavioral Hypotheses Using an Integrated Model of Grocery Store Shopping Path and Purchase Behavior," *Journal of Consumer Research*, 36(3), 478–93.

Hui, Sam K., J. Jeffrey Inman, Yanliu Huang, and Jacob Suher (2013), "The Effect of In-Store Travel Distance on Unplanned Spending: Applications to Mobile Promotion Strategies," *Journal of Marketing*, 77(2), 1–16.

Hui, Sam K., Yanliu Huang, Jacob Suher, and J. Jeffrey Inman (2013), "Deconstructing the "First Moment of Truth": Understanding Unplanned Consideration and Purchase Conversion Using In-Store Video Tracking," *Journal of Marketing Research*, 50(4), 445–62.

Inman, J. Jeffrey, Russell S. Winer, and Rosellina Ferraro (2009), "The Interplay Among Category Characteristics, Customer Characteristics, and Customer Activities on In-Store Decision Making," *Journal of Marketing*, 73(5), 19–29.

Inzlicht, Michael, Brandon J. Schmeichel, and C. Neil Macrae (2014), "Why Self-Control Seems (But May Not Be) Limited," *Trends in Cognitive Sciences*, 18(3), 127–33.

Iyer, Gopalkrishnan R., Markus Blut, Sarah Hong Xiao, and Dhruv Grewal (2019), "Impulse Buying: A Meta-Analytic Review," *Journal of the Academy of Marketing Science*, https://doi.org/10.1007/s11747-019-00670-w.

Kaltcheva, Velitchka D. and Barton A. Weitz (2006), "When Should a Retailer Create an Exciting Store Environment?," *Journal of Marketing*, 70(1), 107–18.

Khan, Uzma and Ravi Dhar (2006), "Licensing Effect in Consumer Choice," *Journal of Marketing Research*, 43(2), 259–66.

Kivetz, Ran and Itamar Simonson (2002), “Earning the Right to Indulge: Effort as a Determinant of Customer Preferences Toward Frequency Program Rewards,” *Journal of Marketing Research*, 39(2), 155–70.

Kollat, David T. and Ronald P. Willett (1967), “Customer Impulse Purchasing Behavior,” *Journal of Marketing Research*, 4(1), 21–31.

Koo, Minjung and Ayelet Fishbach (2008), “Dynamics of Self-Regulation: How (Un)Accomplished Goal Actions Affect Motivation,” *Journal of Personality and Social Psychology*, 9(2), 183–95.

Laran, Juliano and Chris Janiszewski (2009), “Behavioral Consistency and Inconsistency in the Resolution of Goal Conflict,” *Journal of Consumer Research*, 35(6), 967–84.

——— (2011), “Work or Fun? How Task Construal and Completion Influence Regulatory Behavior,” *Journal of Consumer Research*, 37(6), 967–83.

Lee, Angela Y. and E. Tory Higgins (2009), “The Persuasive Power of Regulatory Fit,” in *Frontiers of Social Psychology Social Psychology of Consumer Behavior*, ed. Michaela Wänke, New York: Psychology Press, 319–33.

Lee, Leonard and Dan Ariely (2006), “Shopping Goals, Goal Concreteness, and Conditional Promotions,” *Journal of Consumer Research*, 33(1), 60–70.

Lee, Leonard, J. Jeffrey Inman, Jennifer J. Argo, Tim Böttger, Utpal Dholakia, Timothy Gilbride, Koert Van Ittersum, Barbara Kahn, Ajay Kalra, Donald R. Lehmann, Leigh M. McAlister, Venkatesh Shankar, and Claire I. Tsai (2018), "From Browsing to Buying and Beyond: The Needs-Adaptive Shopper Journey Model," *Journal of the Association for Consumer Research*, 3(3), 277–93.

Lemon, Katherine N. and Peter C. Verhoef (2016), "Understanding Customer Experience throughout the Customer Journey," *Journal of Marketing*, 80(6), 69–96.

Marketing Science Institute (MSI) (2018), *Research Priorities 2018–2020*, Cambridge, MA: Marketing Science Institute.

Park, C. Whan, Easwar S. Iyer, and Daniel C. Smith (1989), "The Effects of Situational Factors on In-Store Grocery Shopping Behavior: The Role of Store Environment and Time Available for Shopping," *Journal of Consumer Research*, 15(4), 422–33.

Prelec, Drazen, and George Loewenstein (1998), "The Red and the Black: Mental Accounting of Savings and Debt," *Marketing Science*, 17(1), 4–28.

Roggeveen, Anne L., Jens Nordfält, and Dhruv Grewal (2016), "Do Digital Displays Enhance Sales? Role of Retail Format and Message Content," *Journal of Retailing*, 92(1), 122–31.

Rook, Dennis W. (1987), "The Buying Impulse," *Journal of Consumer Research*, 14(2), 189–99.

Rook, Dennis W. and Robert J. Fisher (1995), "Normative Influences on Impulsive Buying Behavior," *Journal of Consumer Research*, 22(3), 305–13.

Sciandra, Michael R., J. Jeffrey Inman, and Andrew T. Stephen (2019), "Smart Phones, Bad Calls? The Influence of Consumer Mobile Phone Use, Distraction, and Phone Dependence on Adherence to Shopping Plans," *Journal of the Academy of Marketing Science*, 47(4), 574–94.

Shankar, Venkatesh, Mirella Kleijnen, Suresh Ramanathan, Ross Rizley, Steve Holland, and Shawn Morrissey (2016), "Mobile Shopper Marketing: Key Issues, Current Insights, and Future Research Avenues," *Journal of Interactive Marketing*, 34, 37–48.

Sheehan, Daniel and Koert Van Ittersum (2018), "In-Store Spending Dynamics: How Budgets Invert Relative-Spending Patterns," *Journal of Consumer Research*, 45(1), 49–67.

Shiv, Baba and Alexander Fedorikhin (1999), "Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making," *Journal of Consumer Research*, 23(3), 278–92.

Spiller, Stephen A., Gavan J. Fitzsimons, John G. Lynch Jr., and Gary H. McClelland (2013), "Spotlights, Floodlights, and the Magic Number Zero: Simple Effects Tests in Moderated Regression," *Journal of Marketing Research*, 50(2), 277–88.

Stilley, Karen M., J. Jeffrey Inman, and Kirk L. Wakefield (2010), "Planning to Make Unplanned Purchases? The Role of In-Store Slack in Budget Deviation," *Journal of Consumer Research*, 37(2), 264–78.

Van Ittersum, Koert, Joost M.E. Pennings, and Brian Wansink (2010), "Trying Harder and Doing Worse: How Grocery Shoppers Track In-Store Spending," *Journal of Marketing*, 74(2), 90–104.

Van Ittersum, Koert, Brian Wansink, Joost M.E. Pennings, and Daniel Sheehan (2013), "Smart Shopping Carts: How Real-Time Feedback Influences Spending," *Journal of Marketing*, 77(6), 21–36.

Van Trijp, Hans C. M., Wayne D. Hoyer, and J. Jeffrey Inman (1996), "Why Switch? Product Category Level Explanations for True Variety-Seeking Behavior," *Journal of Marketing Research*, 33(3), 281–92.

Vohs, Kathleen D. and Ronald J. Faber (2007), "Spent Resources: Self-Regulatory Resource Availability Affects Impulse Buying," *Journal of Consumer Research*, 33(4), 537–47.

Wakefield, Kirk L. and J. Jeffrey Inman (2003), "Situational Price Sensitivity: The Role of Consumption Occasion, Social Context, and Income," *Journal of Retailing*, 79(4), 199–212.

Zhang, Ying, Ayelet Fishbach, and Ravi Dhar (2007), "When Thinking Beats Doing: The Role of Optimistic Expectations in Goal-Based Choice," *Journal of Consumer Research*, 34(4), 567–78.

Table 1

Examples of Internal and External In-Store Motivations

	Qualitative Data Examples	Study %	Citation
INTERNAL MOTIVATIONS			
Hedonic desire	"Like it"; "Love it"	20.00%	Hoyer (1984)
	"See extra items"	30.20%	Stilley, Inman, and Wakefield (2010)
	"See things you want"	7.90%	
Curiosity / spontaneity / experiential	"I bought the item on an impulse"	34.50%	Block and Morwitz (1999)
	"… I decided to buy something new"	13.20%	
	"This looks interesting, I think I'll try it."	N/A	Park, Iyer, and Smith (1989)
	"Here's the sugar free dressing. Let me try it."	N/A	
	"Impulse items"	9.50%	Stilley, Inman, and Wakefield (2010)
	"Browse"	4.80%	
EXTERNAL MOTIVATIONS			
Economic reward	"I bought this item because it was on sale"	44.80%	Block and Morwitz (1999)
	"Cheapest"; "Coupon"; "On sale"; etc.	22.50%	Hoyer (1984)
	"I'll get some laundry detergent since there is a rebate."	N/A	Park, Iyer, and Smith (1989)
	"Take advantage of sales"	6.30%	Stilley, Inman, and Wakefield (2010)
	"Uncertain prices"	4.80%	
Forgotten need	"I bought the item because it was on a special display and it got my attention"	28.70%	Block and Morwitz (1999)
	"Oh, I almost forgot, we need some cheese."	N/A	Park, Iyer, and Smith (1989)
	"See things you forgot"	19.00%	Stilley, Inman, and Wakefield (2010)
	"List was not complete"	15.90%	
	"See things you need"	3.20%	
Functionality / complement-arity	"I bought the item because of information on the label"	11.50%	Block and Morwitz (1999)
	"Works well"; "Best brand"; etc.	28.30%	Hoyer (1984)
	"If we are going to have hot dogs, I'd better get some more ketchup."	N/A	Park, Iyer, and Smith (1989)
	"I wasn't planning on getting shrimp, but since the chicken doesn't look too good, I think I will."	N/A	
Normative influence	"… someone who was not with me would like it"	26.40%	Block and Morwitz (1999)
	"… someone who was with me wanted it"	16.10%	
	"Wife likes it"; "Mother bought"; etc.	10.80%	Hoyer (1984)

Table 2

Summary of Study Results

Study	Sample Size & Type	DV	Moderator of Impulsivity * Goal Progress Interaction	Effect of Impulsivity at Goal Progress = 0		Impulsivity * Goal Progress Interaction	
				β	*p*-Value	β	*p*-Value
1a	277 reasons for unplanned purchases from 237 shoppers at grocery store	Internal vs. External Motivation (binary)	N/A	1.0114	.001	−.1750	.002
1b	108 in-store intercepts from 108 shoppers at grocery store	Internal vs. External Motivation (binary)	Unplanned Purchase	1.5393	.005	−.4420	.004
			Planned Purchase	−.4124	.12	−.3220	.26
2a	189 reasons for unplanned purchases from 75 students in online store	Internal vs. External Motivation (binary)	Regular Budget	2.256	.0002	−.4113	< .0001
			Constrained Budget	−.3565	.45	.0417	.71
2b	417 reasons for unplanned purchases from 79 students in online store	Internal vs. External Motivation (6-items)	Regular Budget	.6381	.02	−.1202	.002
			Budget Focus	−.6626	.002	.0201	.40
3	51 in-store intercepts from Prolific participants in online store	Internal vs. External Motivation (6-items)	N/A	.7337	.02	−.4193	.0003
4	918 unplanned considerations (226 purchases) from 50 Prolific participants in online store	Unplanned Purchase (binary)	Internal vs. External Motivation Signage	.7843	< .0001	−.0125	< .0001
5	514 unplanned purchases from 100 Prolific participants in online store	Price of Unplanned Purchase (continuous)	N/A	.2416	.003	−.0238	< .0001

Figure 1

Conceptual Framework

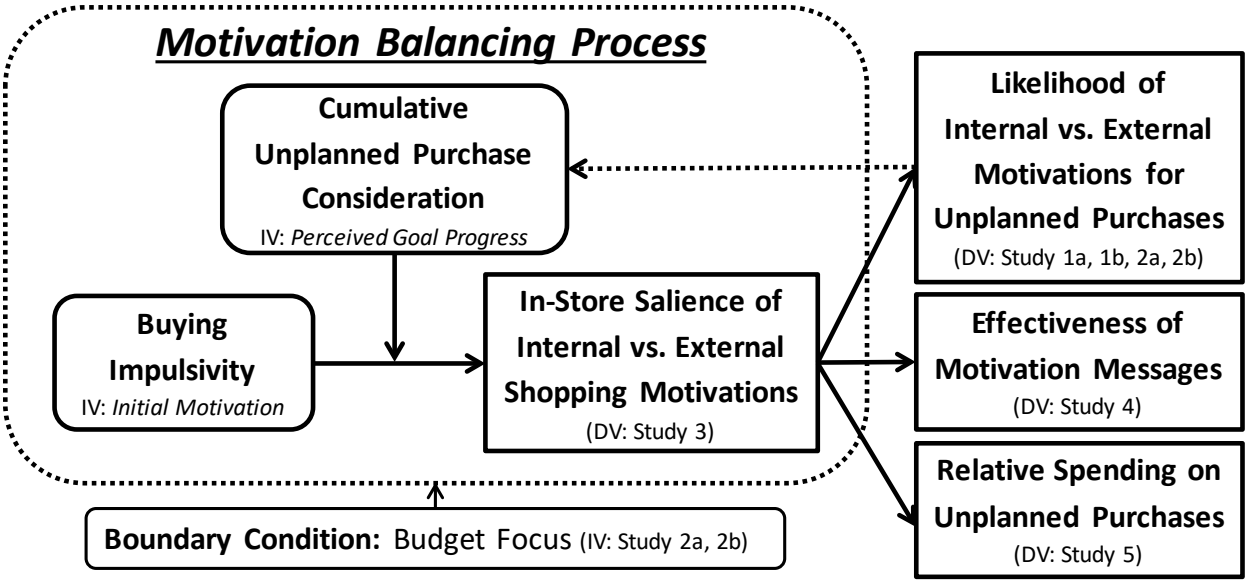
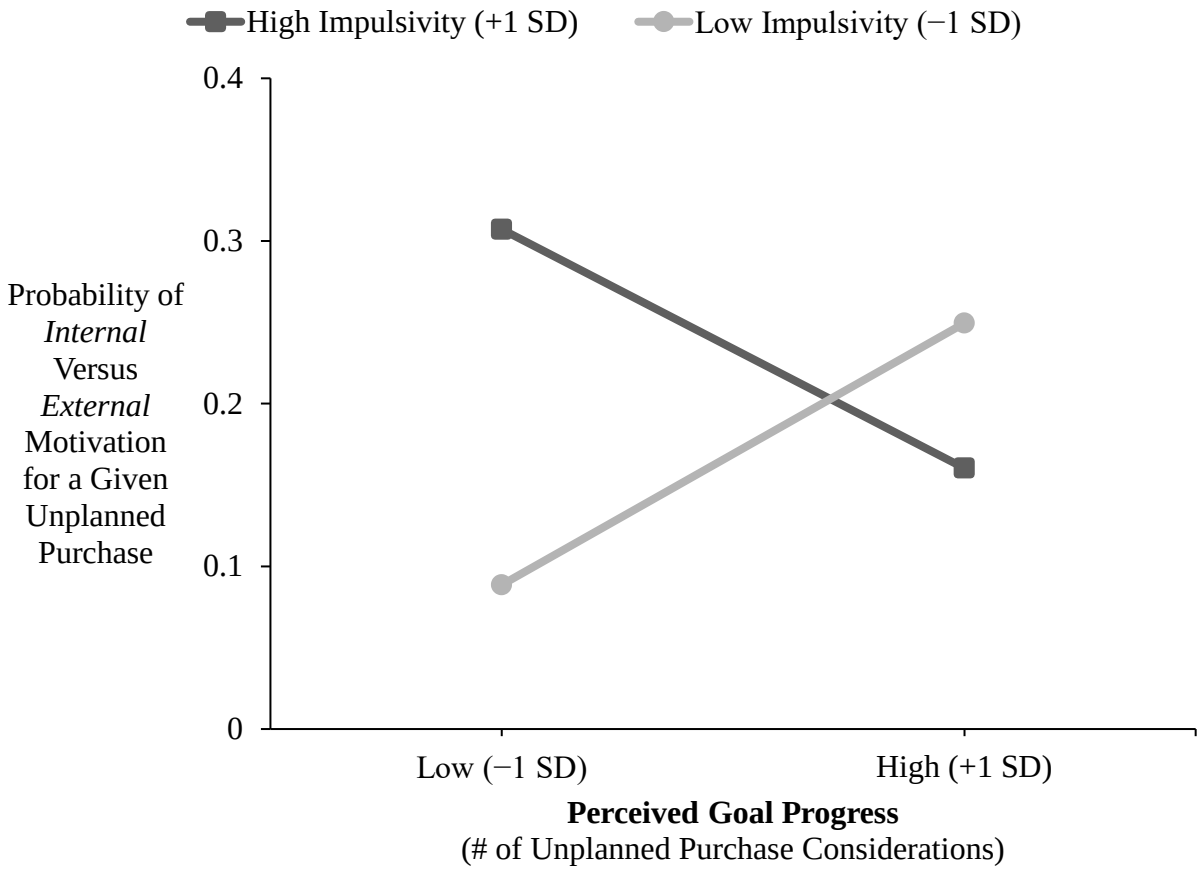


Figure 2

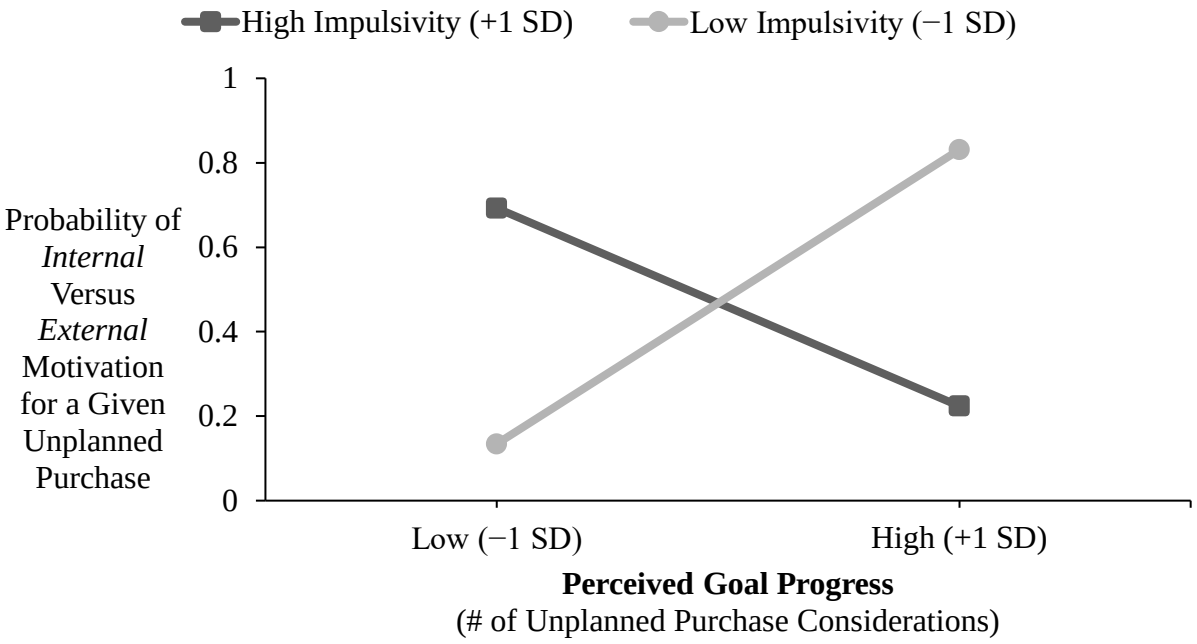
Study 1a: Effect of Unplanned Purchase Consideration on Unplanned Purchase Motivations



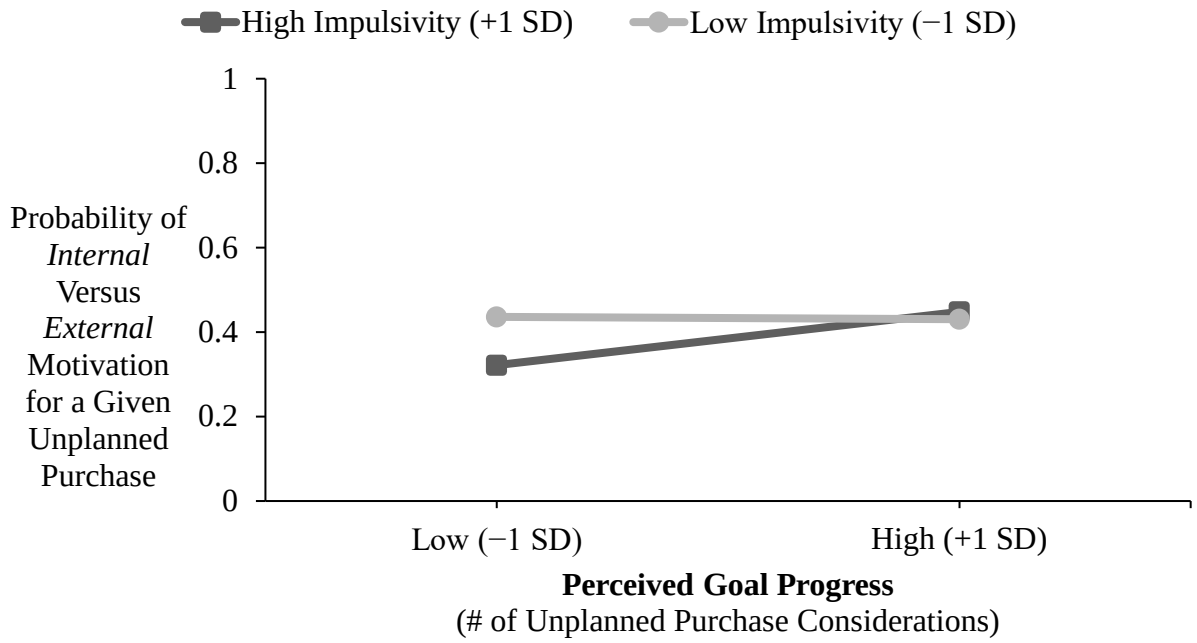
Note: Results illustrated for “Snacks” product category.

Figure 3

Study 2a: Effect of Unplanned Purchase Consideration in Regular Trip Budget Condition



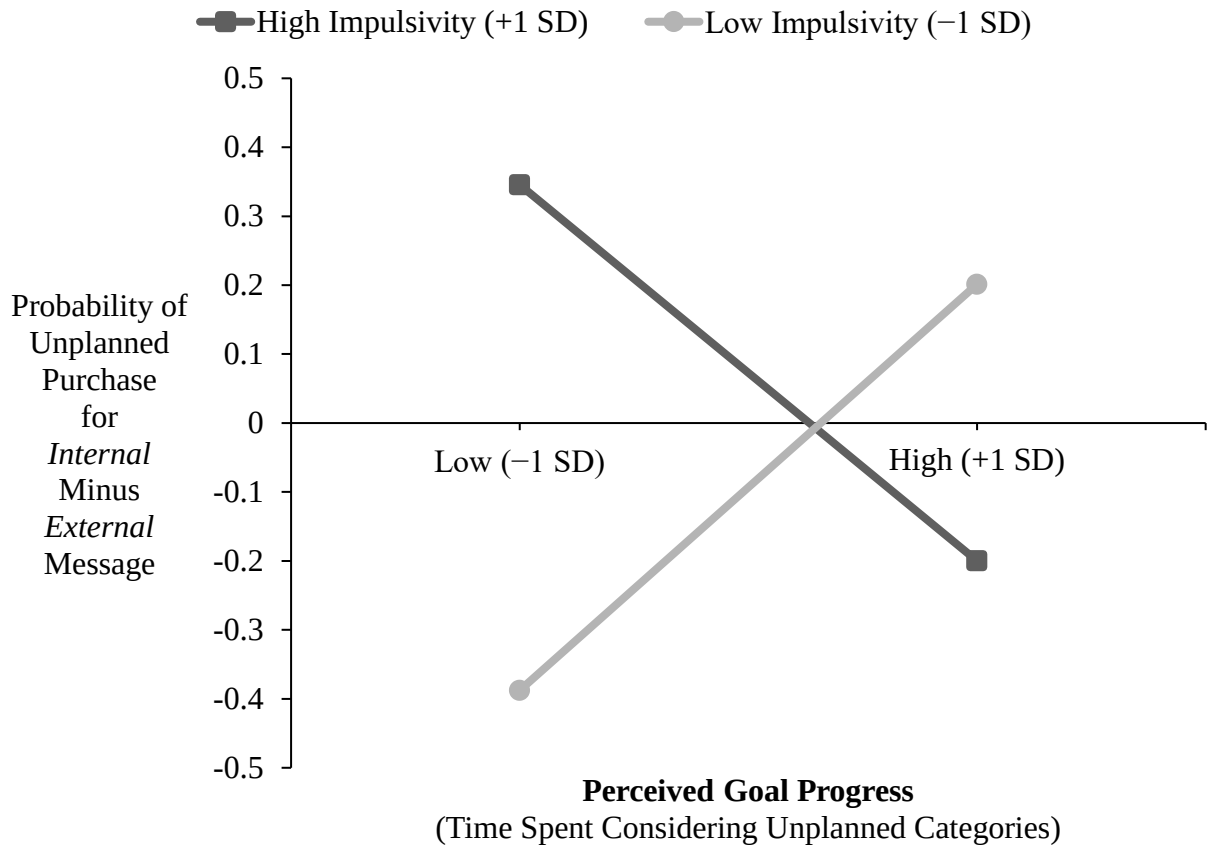
Study 2a: Boundary Condition of Constrained Trip Budget



Note: Results illustrated for “Salsa” product category.

Figure 4

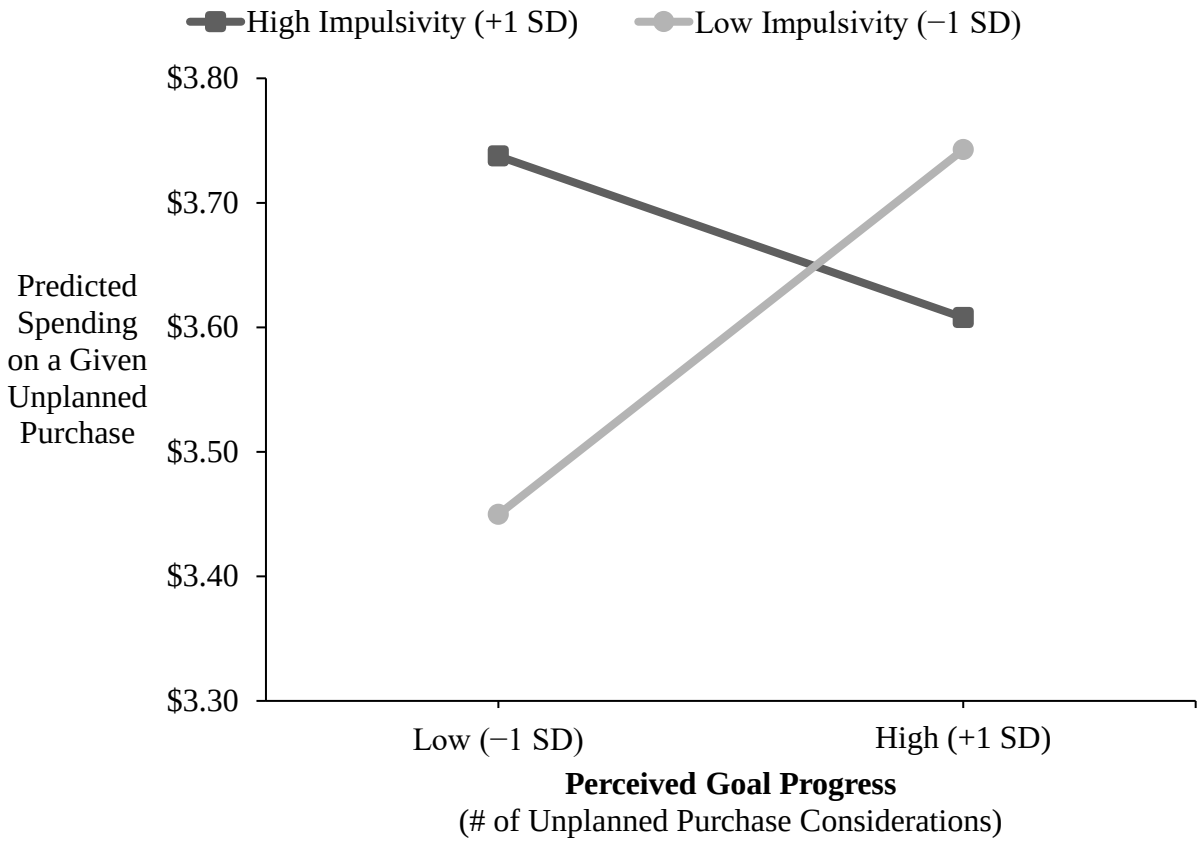
Study 4: Effect of Unplanned Purchase Consideration on Purchase for Motivation Messages



Note: Results illustrated for “Paper Towels” product category.

Figure 5

Study 5: Effect of Unplanned Purchase Consideration on Relative Spending



Note: Results illustrated for “Salsa” product category.

WEB APPENDIX A

REVIEW OF PURCHASE MOTIVATION LITERATURE

Extant studies have often categorized consumers' motivations for shopping activities based on the distinction between internal (i.e., intrinsic) and external (i.e., extrinsic) motivations (Chandon, Wansink, and Laurent 2000; Kahn and Louie 1990; Van Trijp, Hoyer, and Inman 1994). Internal motivations refer to reasons for shopping activities that relate to hedonic or experiential benefits inherently valued by a consumer (Hirschman and Holbrook 1982). Examples would include the experiential desire to engage in shopping activities (e.g., "looks interesting"; Park, Iyer, and Smith 1989) and considering a purchase out of personal interest or curiosity in the product itself (e.g., "see things you want"; Stilley, Inman, and Wakefield 2010). In contrast, external motivations refer to reasons for shopping activities that are task-oriented or incentivized by external rewards (Holbrook 1994). Common external shopping motivations include saving money, addressing a functional need (e.g., to fix a problem), and social influence (Hoyer 1984).

The purpose of distinguishing between internal and external shopping motivations is that it parsimoniously categorizes consumers' diverse reasons for purchase. For instance, Chandon, Wansink, and Laurent (2000) demonstrate that the primary dimensions of promotion response are internally driven benefits (i.e., exploration, entertainment, and value expression) and externally driven benefits (i.e., savings, convenience, and quality). Similarly, Van Trijp, Hoyer, and Inman (1996) separate true variety-seeking behavior from derived varied behavior with the internal (e.g., "try a new product") and external (e.g., "brand was on sale") classification of purchase motivation.

Thus, building on past motivation studies, the present research proposes that consumers' reasons for unplanned purchases can represent internal interest and enjoyment of a product itself or the influence of instrumental goals and peripheral rewards. Our conceptual framework captures

this distinction by focusing on the salience (i.e., importance) of internal as opposed to external motivations for unplanned purchases. To illustrate this distinction, Table 1 categorizes qualitative data from four studies that report consumers' in-store shopping motivations (Block and Morwitz 1999; Hoyer 1984; Park, Iyer, and Smith 1989; Stilley, Inman, and Wakefield 2010). The examples of internal motivation include hedonic desire and curiosity or spontaneity. In contrast, the examples of external motivation include economic reward, forgotten need, functionality or complementarity, and normative influence.

WEB APPENDIX B

STUDY 1A COMPARISON OF PARTICIPANTS WITH AND WITHOUT VIDEO CAMERA

	Study 1a Sample With Video Camera (N = 237)		Comparison Sample Without Video Camera (N = 43)		Difference Between Sample With and Without Video Camera	
Variable	Mean	SD	Mean	SD	F Value	Pr > F
Buying Impulsivity	2.26	0.71	2.45	0.88	1.34	0.2477
Total Spent (dollars)	42.83	35.48	34.84	28.21	1.93	0.1665
Shopping Trip Duration (seconds)	947.37	567.50	850.14	544.15	1.10	0.2954

Note: Model is Generalized Linear Model with identity link and sample type treated as categorical variable; including consumers without reasons for unplanned purchases.

WEB APPENDIX C

STUDY 1A SUMMARY OF REASONS FOR UNPLANNED PURCHASES

	No. Purchases	Percentage	Motivation Type
Price-related	74	26.7%	*External*
Needed the product	66	23.8%	*External*
Looked good	61	22.0%	*Internal*
Reminded in-store	52	18.8%	*External*
Wanted the product	31	11.2%	*Internal*
For other person	21	7.6%	*External*

Note: Participants can give multiple reasons for single purchase

WEB APPENDIX D

SUMMARY STATISTICS

Study 1a: In-Store Video Tracking

Variable	Mean	StDev	Min	Max
Internal Motivation	0.29	0.45	0.00	1.00
External Motivation	0.77	0.42	0.00	1.00
Buying Impulsivity	2.33	0.75	1.00	4.22
Unplanned Consideration (# of Displays)	3.68	4.21	0.00	25.00
Unplanned Consideration (Seconds)	128.95	174.16	0.00	971.00
Planned Consideration (Seconds)	176.69	212.69	0.00	1273.00
Number of Planned Categories	5.78	3.79	1.00	32.00
Category Hedonicity	3.93	0.98	1.43	6.10

Study 1b: In-Store Intercept

Variable	Mean	StDev	Min	Max
Internal Motivation	0.46	0.50	0.00	1.00
External Motivation	0.63	0.49	0.00	1.00
Buying Impulsivity (2-items)	3.95	1.02	1.00	5.00
Product Count (# of Items in Basket)	4.89	4.46	1.00	20.00
Purchase Type (Unplanned = 1; Planned = −1)	0.46	0.89	-1.00	1.00
Category Hedonicity	4.16	1.15	1.42	5.96

Study 2a: Shopping Experiment with Manipulated Trip Budget

Variable	Mean	StDev	Min	Max
Internal Motivation	0.58	0.49	0.00	1.00
External Motivation	0.43	0.50	0.00	1.00
Buying Impulsivity	2.71	0.77	1.00	4.56
Unplanned Consideration (# of Displays)	5.60	3.94	0.00	12.00
Trip Budget (Regular = 1; Constrained = −1)	-0.03	1.00	-1.00	1.00
Category Hedonicity	4.21	1.32	1.78	5.96

Study 2b: Shopping Experiment with Manipulated Budget Focus

Variable	Mean	StDev	Min	Max
Internal Motivation	5.57	1.32	1.00	7.00
External Motivation	3.50	1.33	1.00	7.00
Internal Minus External Motivation	2.07	1.92	-5.00	6.00
Buying Impulsivity	2.36	0.82	1.00	4.20
Unplanned Consideration (# of Displays)	6.07	3.79	0.00	13.00
Budget Focus (Regular Focus = 1; Budget Focus = −1)	-0.02	1.00	-1.00	1.00
Category Hedonicity	4.00	1.36	1.63	5.96

Study 3: Shopping Experiment with Motivation Salience Intercept

Variable	Mean	StDev	Min	Max
Internal Motivation	5.22	1.53	1.00	7.00
External Motivation	5.67	0.88	2.50	7.00
Internal Minus External Motivation	-0.45	1.72	-6.00	2.13
Buying Impulsivity	2.16	0.99	1.00	5.00
Unplanned Consideration (# of Displays)	2.46	1.96	0.00	12.00
Unplanned Consideration (Seconds)	39.31	30.12	0.00	156.00

Study 4: Shopping Experiment with In-Store Marketing

Variable	Mean	StDev	Min	Max
Non-List Category Purchase (Yes = 1; No = 0)	0.22	0.41	0.00	1.00
Buying Impulsivity	2.35	0.81	1.11	4.11
Unplanned Consideration (# of Displays)	12.85	11.19	0.00	48.00
Unplanned Consideration (Seconds)	68.30	53.04	0.00	273.00
Message Type (Internal = 2; None = 0; External = −1)	-0.05	1.07	-1.00	2.00
Category Hedonicity	4.26	1.24	1.78	5.96

Study 5: Shopping Experiment with Relative Spending

Variable	Mean	StDev	Min	Max
Purchase Price	2.75	1.05	0.89	8.66
Relative Price	0.89	0.21	0.43	1.58
Buying Impulsivity	2.29	0.81	1.00	4.56
Unplanned Consideration (# of Displays)	7.49	5.49	0.00	32.00
Unplanned Consideration (Seconds)	54.03	38.83	0.00	241.00
Category Hedonicity	4.20	1.27	1.78	5.96

WEB APPENDIX E

CORRELATION TABLES

Study 1a: In-Store Video Tracking

	Internal Motivation	External Motivation	Buying Impulsivity	Unplanned Consideration (Displays)	Unplanned Consideration (Seconds)	Planned Consideration (Seconds)	Number of Planned Categories	Category Hedonicity
Internal Motivation	1.00	-0.82	0.12	-0.01	-0.05	0.00	0.10	0.13
External Motivation	-0.82	1.00	-0.15	-0.03	0.04	-0.04	-0.15	-0.10
Buying Impulsivity	0.12	-0.15	1.00	0.02	0.06	0.05	0.25	-0.07
Unplanned Consideration (Displays)	-0.01	-0.03	0.02	1.00	0.84	0.55	0.22	0.01
Unplanned Consideration (Seconds)	-0.05	0.04	0.06	0.84	1.00	0.42	0.22	0.03
Planned Consideration (Seconds)	0.00	-0.04	0.05	0.55	0.42	1.00	0.44	0.10
Number of Planned Categories	0.10	-0.15	0.25	0.22	0.22	0.44	1.00	0.05
Category Hedonicity	0.13	-0.10	-0.07	0.01	0.03	0.10	0.05	1.00

Study 1b: In-Store Intercept

	Internal Motivation	External Motivation	Buying Impulsivity	Product Count	Purchase Type	Category Hedonicity
Internal Motivation	1.00	-0.75	0.06	-0.10	0.06	0.17
External Motivation	-0.75	1.00	-0.10	0.07	0.01	-0.10
Buying Impulsivity	0.06	-0.10	1.00	0.14	0.01	0.07
Product Count	-0.10	0.07	0.14	1.00	0.01	-0.10
Purchase Type	0.06	0.01	0.01	0.01	1.00	-0.12
Category Hedonicity	0.17	-0.10	0.07	-0.10	-0.12	1.00

Study 2a: Shopping Experiment with Manipulated Trip Budget

	Internal Motivation	External Motivation	Buying Impulsivity	Unplanned Consideration (Displays)	Trip Budget	Category Hedonicity
Internal Motivation	1.00	-0.90	-0.02	0.01	-0.01	0.38
External Motivation	-0.90	1.00	-0.02	0.02	0.06	-0.34
Buying Impulsivity	-0.02	-0.02	1.00	0.07	-0.26	-0.03
Unplanned Consideration (Displays)	0.01	0.02	0.07	1.00	0.07	-0.19
Trip Budget	-0.01	0.06	-0.26	0.07	1.00	-0.13
Category Hedonicity	0.38	-0.34	-0.03	-0.19	-0.13	1.00

Study 2b: Shopping Experiment with Manipulated Budget Focus

	Internal Motivation	External Motivation	Internal Minus External Motivation	Buying Impulsivity	Unplanned Consideration (Displays)	Budget Focus	Category Hedonicity
Internal Motivation	1.00	-0.05	0.72	-0.12	-0.01	0.12	0.35
External Motivation	-0.05	1.00	-0.73	0.03	-0.01	0.10	-0.25
Internal Minus External Motivation	0.72	-0.73	1.00	-0.10	0.00	0.01	0.41
Buying Impulsivity	-0.12	0.03	-0.10	1.00	-0.10	-0.26	-0.03
Unplanned Consideration (Displays)	-0.01	-0.01	0.00	-0.10	1.00	0.07	0.02
Budget Focus	0.12	0.10	0.01	-0.26	0.07	1.00	0.01
Category Hedonicity	0.35	-0.25	0.41	-0.03	0.02	0.01	1.00

Study 3: Shopping Experiment with Motivation Salience Intercept

	Internal Motivation	External Motivation	Internal Minus External Motivation	Buying Impulsivity	Unplanned Consideration (Displays)	Unplanned Consideration (Seconds)
Internal Motivation	1.00	0.06	0.86	-0.15	0.29	0.17
External Motivation	0.06	1.00	-0.46	-0.04	0.04	0.02
Internal Minus External Motivation	0.86	-0.46	1.00	-0.12	0.24	0.15
Buying Impulsivity	-0.15	-0.04	-0.12	1.00	-0.13	-0.07
Unplanned Consideration (Displays)	0.29	0.04	0.24	-0.13	1.00	0.78
Unplanned Consideration (Seconds)	0.17	0.02	0.15	-0.07	0.78	1.00

Study 4: Shopping Experiment with In-Store Marketing

	Non-List Category Purchase	Buying Impulsivity	Unplanned Consideration (Displays)	Unplanned Consideration (Seconds)	Message Type	Category Hedonicity
Non-List Category Purchase	1.00	0.10	-0.18	-0.04	-0.01	0.00
Buying Impulsivity	0.10	1.00	-0.03	0.04	0.07	0.00
Unplanned Consideration (Displays)	-0.18	-0.03	1.00	0.68	0.00	0.01
Unplanned Consideration (Seconds)	-0.04	0.04	0.68	1.00	0.00	0.03
Message Type	-0.01	0.07	0.00	0.00	1.00	0.00
Category Hedonicity	0.00	0.00	0.01	0.03	0.00	1.00

Study 5: Shopping Experiment with Relative Spending

	Purchase Price	Relative Price	Buying Impulsivity	Unplanned Consideration (Displays)	Unplanned Consideration (Seconds)	Category Hedonicity
Purchase Price	1.00	0.59	0.03	0.01	0.00	0.18
Relative Price	0.59	1.00	0.06	0.01	0.03	0.02
Buying Impulsivity	0.03	0.06	1.00	0.03	0.07	0.04
Unplanned Consideration (Displays)	0.01	0.01	0.03	1.00	0.71	-0.01
Unplanned Consideration (Seconds)	0.00	0.03	0.07	0.71	1.00	0.01
Category Hedonicity	0.18	0.02	0.04	-0.01	0.01	1.00

WEB APPENDIX F

COMPLETE MODEL RESULTS

Study 1a: In-Store Video Tracking

DV: Internal Motivation = 1; External Motivation = 0

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		t	Pr > |t|
Intercept	-1.4816	0.5438	-2.5578	-0.4055	-2.72	0.0073
Buying Impulsivity	0.3672	0.2108	-0.0497	0.7841	1.74	0.0838
Unplanned Consideration (# of Displays)	0.0245	0.03899	-0.0526	0.1016	0.63	0.5308
Impulsivity * Unplanned Consideration	-0.175	0.06236	-0.2984	-0.0517	-2.81	0.0057
Number of Planned Categories	0.02471	0.03365	-0.0419	0.09126	0.73	0.4641
Category Hedonicity	0.5292	0.2401	0.05435	1.0041	2.2	0.0292

Method: SAS GLIMMIX hierarchical regression with binomial distribution, logit link function, empirical-based standard error estimates, category fixed effects, and individual intercepts drawn for each participant.

Study 1b: In-Store Intercept

DV: Internal Motivation = 1; External Motivation = 0

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		Chi-Sq	Pr > ChiSq
Intercept	0.1125	0.5124	-0.8917	1.1167	0.05	0.8261
Buying Impulsivity	-0.1185	0.3656	-0.8351	0.5982	0.10	0.746
Product Count (# of Items in Basket)	-0.1502	0.1027	-0.3514	0.051	2.14	0.1433
Purchase Type (Unplanned = 1; Planned = −1)	0.64	0.3951	-0.1345	1.4144	2.62	0.1053
Impulsivity * Product Count	-0.2357	0.1328	-0.4959	0.0245	3.15	0.0758
Impulsivity * Purchase Type	-0.9325	0.4383	-1.7915	-0.0735	4.53	0.0334
Product Count * Purchase Type	0.1796	0.1346	-0.0843	0.4435	1.78	0.1823
Impulsivity * Product Count * Purchase Type	-0.382	0.1656	-0.7065	-0.0574	5.32	0.0211
Category Hedonicity	-0.3305	0.3655	-1.0468	0.3858	0.82	0.3658

Method: SAS GENMOD regression with binomial distribution, logit link function, and category fixed effects.

Study 2a: Shopping Experiment with Manipulated Trip Budget

DV: Internal Motivation = 1; External Motivation = 0

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		t	Pr > |t|
Intercept	-0.6142	0.9222	-2.4609	1.2326	-0.67	0.5081
Buying Impulsivity	0.9498	0.5795	-0.1983	2.0978	1.64	0.104
Unplanned Consideration (# of Displays)	0.06071	0.06308	-0.0643	0.1857	0.96	0.3379
Trip Budget (Regular = 1; Constrained = −1)	-0.1848	0.0888	-0.3607	-0.0089	-2.08	0.0397
Impulsivity * Unplanned Consideration	-0.05867	0.4482	-0.9467	0.8294	-0.13	0.8961
Impulsivity * Trip Budget	1.3063	0.5962	0.1251	2.4874	2.19	0.0305
Unplanned Consideration * Trip Budget	0.02811	0.0625	-0.0957	0.1519	0.45	0.6538
Impulsivity * Unplanned Consideration * Trip Budget	-0.2265	0.08981	-0.4044	-0.0486	-2.52	0.0131
Category Hedonicity	0.1409	1.6867	-3.2008	3.4826	0.08	0.9336

Method: SAS GLIMMIX hierarchical regression with binomial distribution, logit link function, empirical-based standard error estimates, category fixed effects, and individual intercepts drawn for each participant.

Study 2b: Shopping Experiment with Manipulated Budget Focus

DV: [Avg(Internal Motivation) − Avg(External Motivation)]

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		t	Pr > |t|
Intercept	2.3977	0.3627	1.6745	3.121	6.61	<.0001
Buying Impulsivity	-0.3088	0.1642	-0.6319	0.01431	-1.88	0.061
Unplanned Consideration (# of Displays)	-0.02384	0.01919	-0.0616	0.01391	-1.24	0.2149
Budget Focus (Regular Focus = 1; Budget Focus = −1)	-0.05009	0.025	-0.0993	-0.0009	-2.00	0.046
Impulsivity * Unplanned Consideration	-0.07596	0.1331	-0.3378	0.1859	-0.57	0.5686
Impulsivity * Budget Focus	0.235	0.1642	-0.088	0.5581	1.43	0.1534
Unplanned Consideration * Budget Focus	0.01139	0.01912	-0.0262	0.04901	0.60	0.5518
Impulsivity * Unplanned Consideration * Budget Focus	-0.07016	0.02471	-0.1188	-0.0216	-2.84	0.0048
Category Hedonicity	-0.3132	0.6728	-1.6367	1.0104	-0.47	0.6419

Method: SAS GLIMMIX hierarchical regression with Gaussian distribution, identity link function, empirical-based standard error estimates, category fixed effects, and individual intercepts drawn for each participant.

Study 3: Shopping Experiment with Motivation Salience Intercept

DV: [Avg(Internal Motivation) − Avg(External Motivation)]

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		Chi-Sq	Pr > ChiSq
Intercept	-0.5592	0.2083	-0.9675	-0.1509	7.21	0.0073
Buying Impulsivity	-0.2979	0.2161	-0.7215	0.1257	1.9	0.1681
Unplanned Consideration (# of Displays)	0.1142	0.0998	-0.0815	0.3099	1.31	0.2527
Impulsivity * Unplanned Consideration	-0.4193	0.1154	-0.6456	-0.1931	13.2	0.0003

Method: SAS GENMOD regression with normal distribution and identity link function.

Study 4: Shopping Experiment with Point-of-Purchase Messages

DV: Purchase = 1; No Purchase = 0

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		t	Pr > |t|
Intercept	0.4536	1.1543	-1.812	2.7192	0.39	0.6945
Buying Impulsivity	-0.1148	1.1984	-2.4669	2.2373	-0.1	0.9237
Unplanned Consideration (Seconds)	-0.00312	0.00294	-0.0089	0.00265	-1.06	0.2891
Message Type (Internal = 2; None = 0; External = −1)	-0.01152	0.00377	-0.0189	-0.0041	-3.05	0.0023
Impulsivity * Unplanned Consideration	-0.1844	0.09943	-0.3796	0.01075	-1.85	0.064
Impulsivity * Message Type	-0.04718	0.118	-0.2787	0.1844	-0.4	0.6893
Unplanned Consideration * Message Type	-0.00257	0.0021	-0.0067	0.00155	-1.22	0.221
Impulsivity * Unplanned Consideration * Message Type	-0.01253	0.00282	-0.0181	-0.007	-4.44	<.0001
Category Hedonicity	0.7944	1.0438	-1.2542	2.843	0.76	0.4468

Method: SAS GLIMMIX regression with binomial distribution, logit link function, empirical-based standard error estimates, category fixed effects, and participant fixed effects.

Study 5: Shopping Experiment with Relative Spending

DV: Purchase Price

Variable	Parameter Estimate	Standard Error	95% Confidence Limits		t	Pr > |t|
Intercept	3.6344	0.1007	3.4344	3.8344	36.08	<.0001
Buying Impulsivity	0.04722	0.06053	-0.0718	0.1662	0.78	0.4357
Unplanned Consideration (# of Displays)	0.007433	0.00436	-0.0011	0.016	1.71	0.0889
Impulsivity * Unplanned Consideration	-0.02376	0.00564	-0.0349	-0.0127	-4.21	<.0001
Category Hedonicity	0.9201	0.2123	0.5027	1.3374	4.33	<.0001

Method: SAS GLIMMIX hierarchical regression with Gaussian distribution, identity link function, empirical-based standard error estimates, category fixed effects, and individual intercepts drawn for each participant.

WEB APPENDIX G

STUDY 1A SUPPLEMENTARY ANALYSES

Operationalizing perceived goal progress as the time spent considering unplanned purchases produces consistent results for the interaction between buying impulsivity and unplanned purchase consideration ($\beta = -.00427$, $t(135) = -3.03$, $p = .003$). In support of hypothesis 1, a spotlight test found a positive effect of impulsivity at the first unplanned purchase consideration ($\beta = .9381$, $t(135) = 3.24$, $p = .002$). In support of hypothesis 2, floodlight analysis revealed a negative effect of unplanned purchase consideration when impulsivity is greater than 2.83 ($\beta = -.00209$, $t(135) = -2.00$, $p < .05$) and a positive effect when impulsivity is less than 1.81 ($\beta = .002354$, $t(135) = 1.99$, $p < .05$). However, demonstrating the specificity of our results to unplanned behaviors, operationalizing perceived progress as the time spent considering *planned* purchases resulted in a nonsignificant interaction between buying impulsivity and planned purchase consideration($\beta = -.00116$, $t(135) = -.96$, $p = .34$). In addition, and in support of hypothesis 3, including an exogenous measure of budget focus (i.e., pre-trip budget in dollars; M = 44.70, SD = 37.74, min = 5, max = 300) in the main model revealed the expected three-way interaction between buying impulsivity, unplanned purchase consideration, and budget focus ($\beta = -.00528$, $t(133) = -2.37$, $p = .02$). Consistent with our prediction that greater budget focus reduces the effect of cumulative unplanned purchase consideration on unplanned purchase motivations, floodlight analysis found that the interaction between impulsivity and unplanned purchase consideration was negative when budget exceeds 35 dollars ($\beta = -.1120$, $t(133) = -1.98$, $p < .05$).

Next, we investigated consumers' patterns of relative purchase price (Sheehan and Van Ittersum 2018) in Study 1a. A hierarchical regression of logged unplanned purchase price in dollars (N = 649; M = 1.25, SD = .69, min = −1.61, max = 3.65) for all unplanned purchases (i.e., including

unplanned purchases without reasons for purchase) from participants who completed the exit survey on the main effects and interaction between impulsivity and unplanned purchase consideration with category dummy variables revealed the expected negative interaction between impulsivity and unplanned purchase consideration ($\beta = -.02519$, $t(471) = -4.62$, $p < .0001$). In support of hypothesis 5a, a spotlight test at the first unplanned purchase consideration found a positive effect of impulsivity ($\beta = .1037$, $t(471) = 2.44$, $p = .02$). We then used floodlight analysis to identify the ranges of impulsivity (M = 2.46, SD = .75, min = 1.00, max = 4.22) for which the simple effect of unplanned purchase consideration was significant. In support of hypothesis 5b, there was a negative effect of unplanned purchase consideration when impulsivity is greater than 2.63 ($\beta = -.009$, $t(471) = -1.99$, $p < .05$) and a positive effect when impulsivity is less than 1.71 ($\beta = .01468$, $t(471) = 1.98$, $p < .05$). In addition, we find similar results when using only the 277 unplanned purchases with reasons for purchase from the main Study 1a analysis. There was a negative interaction between impulsivity and unplanned purchase consideration ($\beta = -.03668$, $t(135) = -2.67$, $p = .009$) and a spotlight test at the first unplanned purchase consideration reveals a marginally significant positive simple effect of impulsivity ($\beta = .1463$, $t(135) = 1.77$, $p = .08$). However, suggesting the specificity of our findings to unplanned behaviors, the purchase price regression with consumers' *planned* purchases (N = 1221) revealed a nonsignificant interaction between impulsivity and unplanned purchase consideration ($\beta = .000938$, $t(1020) = .11$, $p = .91$).

Finally, using the hierarchical regression model for purchase price described above, we find consistent results when the dependent variable is the logged unplanned purchase price divided by the category average (M = −.13, SD = .57, min = −2.64, max = 1.54). The interaction between impulsivity and unplanned purchase consideration was again negative ($\beta = -.02648$, $t(471) = -5.51$, $p < .0001$) and a spotlight test at the first unplanned purchase consideration revealed a

positive simple effect of impulsivity ($\beta = .1139$, $t(471) = 2.78$, $p = .006$). In addition, including participant fixed effects in the purchase price models reveals a consistent negative interaction when the dependent variable is the logged unplanned purchase price ($\beta = -.02798$, $t(471) = -3.87$, $p = .0001$) and the logged unplanned purchase price divided by the category average ($\beta = -.02634$, $t(471) = -2.99$, $p = .003$).

WEB APPENDIX H

STUDY 1A WITHIN-SUBJECT CONTRAST-SCORE ANALYSIS

We conducted a contrast-score analysis to investigate whether consumer motivations for unplanned purchases change *within* a shopping trip (Spiller et al. 2013, p. 285). For each pair of unplanned purchases made by a single shopper, we subtracted the motivation dependent variable and unplanned purchase consideration measures of the earlier purchase from the latter purchase. This procedure created a new data set with 266 motivation contrast scores taken from the 75 shoppers with more than one unplanned purchase that included a reason for purchase. The motivation contrast scores can take one of three values representing: (a) the change from internal to external motivation (DV = −1; N = 42), (b) the change from external to internal motivation (DV = 1; N = 55), or (c) no change in motivation (DV = 0; N = 169). We calculated the change in unplanned purchase consideration (i.e., change in perceived goal progress) as the logged difference in the number of unplanned purchase considerations (M = 1.23, SD = .67, min = .00, max = 2.89).

To test the within-subject effect of the change in unplanned purchase consideration on the change in motivations for unplanned purchases, we regressed the motivation contrast scores (M = .05, SD = .60) on buying impulsivity, the change in unplanned purchase consideration, and their two-way interaction. The model predicted the change in motivation between unplanned purchases using a linear regression with individual fixed effects included as covariates. We mean-centered buying impulsivity and the change in unplanned purchase consideration.

The main effects were nonsignificant for buying impulsivity (β = .7630, Chi-Sq(189) = 1.86, p = .17) and the change in unplanned purchase consideration (β = .0810, Chi-Sq(189) = 1.73, p = .19). As expected, there was a negative interaction between buying impulsivity and the change in unplanned purchase consideration (β = −.2529, Chi-Sq(189) = 7.14, p = .008). To decompose

this interaction, we used floodlight analysis to identify the ranges of buying impulsivity (M = 2.48, SD = .73, min = 1.00, max = 4.22) for which the simple effect of the change in unplanned purchase consideration was significant. In support of hypothesis 2, there was a negative effect of the change in unplanned purchase consideration for impulsivity greater than 3.62 ($\beta = -.2098$, Chi-Sq(189) = 3.87, $p < .05$) and a positive effect of the change in unplanned purchase consideration for impulsivity less than 2.25 ($\beta = .1417$, Chi-Sq(189) = 3.86, $p < .05$). Thus, a greater change in unplanned purchase consideration between unplanned purchases has opposite effects on the likelihood of internal versus external unplanned purchase motivations for high- and low-impulsivity consumers.

In addition, we add the timing of the first purchase to our contrast-score analysis to account for a purchase timing explanation of our results (i.e., the opposite patterns of motivation change are the result of consumers making different purchases at different times in a trip). This model regressed the change in motivation on buying impulsivity, the timing of the first purchase, and the change in unplanned purchase consideration, and all two-way and three-way interactions between the variables with individual fixed effects included as covariates. Consistent with the proposed mechanism of motivation balancing, we again find a two-way interaction between buying impulsivity and the change in unplanned purchase consideration ($\beta = -.5836$, Chi-Sq(185) = 24.58, $p < .0001$). Thus, this contrast-score analysis provides evidence that a change in unplanned purchase consideration influences consumers' motivations for unplanned purchases beyond the impact of the timing of purchases within a shopping trip. In addition, the preceding contrast-score analyses produced consistent results when using a multinomial logistic regression.

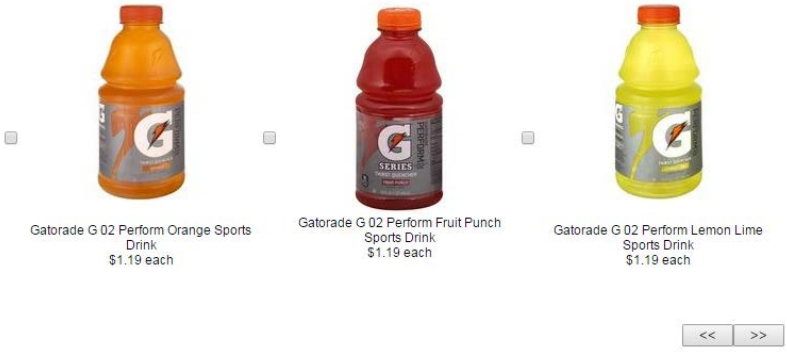
Finally, we supplement our contrast-score analysis of Study 1a with a comparison of our proposed dynamic framework to a static model based on category characteristics only and to a

non-linear model with linear and quadratic terms for the change in unplanned purchase consideration. The following thresholds determined changes in predicted motivations: less than −.5 is a change from internal to external motivation; greater than .5 is a change from external to internal motivation; between or equal to −.5 and .5 is no change in motivation. As compared to our proposed model, using the static model with only category characteristics led to an 11 percentage point decrease in correct predictions (from 44% to 33%) and using the non-linear model led to the same percentage of correct predictions (44%). In other words, our proposed model results in a 33% relative increase in correct predictions of changes in motivation against the baseline model or a random draw of the three possible outcomes. Further, even though 8.65% of the non-linear model's predictions differ from our proposed model, both the linear and non-linear models have the same rate of correct predictions (44% hit rate for both linear and non-linear models). The value of the comparison to the non-linear model is evidence that the opposing changes in high- and low-impulsivity consumers' motivations for unplanned purchases are linear in nature. This is important because it is consistent with a gradual balancing of internal and external motivations.

Overall, our contrast-score analysis of Study 1a is consistent with our main analysis and uses an individual fixed-effects model to provide evidence that the level of buying impulsivity moderates the change in consumer motivations for unplanned purchases *within* a shopping trip.

WEB APPENDIX I

EXAMPLE OF NON-LIST CATEGORY IN ONLINE SHOPPING EXPERIMENTS



WEB APPENDIX J

STUDY 2A SUPPLEMENTARY ANALYSES

We included individual fixed effects in Study 2a's logistic regression by restricting the sample to the 21 participants in the regular budget condition with multiple non-list purchases (N = 122) and omitting the category dummy variables. As expected, the interaction between buying impulsivity and unplanned purchase consideration had a negative effect on the likelihood of internal versus external motivations ($\beta = -.7774$, $t(91) = -3.03$, $p = .003$). In support of hypothesis 1, a spotlight test found a positive effect of impulsivity at the first unplanned purchase consideration ($\beta = 4.5149$, $t(91) = 2.39$, $p = .02$). In support of hypothesis 2, floodlight analysis revealed a negative effect of unplanned purchase consideration when impulsivity is greater than 3.57 ($\beta = -.4459$, $t(91) = -2.00$, $p < .05$) and a positive effect when impulsivity is less than 2.76 ($\beta = .1927$, $t(91) = 2.05$, $p < .05$).

WEB APPENDIX K

STUDY 2A WITHIN-SUBJECT CONTRAST-SCORE ANALYSIS

We conducted a contrast-score analysis of Study 2a following the same procedure as the contrast-score analysis for Study 1a (Web Appendix H). The data set includes 341 motivation contrast scores taken from 45 shoppers making 175 unique unplanned purchases. The distribution of the dependent variable was: (a) the change from internal to external motivation (N = 65), (b) the change from external to internal motivation (N = 81), or (c) no change in motivation (N = 195). We regressed the motivation contrast scores (M = .05, SD = .65) on buying impulsivity, the change in unplanned purchase consideration (M = 1.57, SD = .53, min = .69, max = 2.56), the manipulated trip budget condition contrast code (Regular Budget = 1; Constrained Budget = −1), and all two-way and three-way interactions between the variables. The model was a linear regression with individual fixed effects included as covariates and we mean-centered buying impulsivity, change in unplanned purchase consideration, and the trip budget contrast code.

The main effects were nonsignificant for buying impulsivity (β = .1273, Chi-Sq(292) = .03, p = .87), the change in unplanned purchase consideration (β = −.0541, Chi-Sq(292) = .41, p = .52), and trip budget (β = −.0312, Chi-Sq(292) = .00, p = .97). As expected, a spotlight test revealed a negative interaction between buying impulsivity and the change in unplanned purchase consideration in the regular trip budget condition (β = −.4185, Chi-Sq(292) = 10.94, p < .001). To decompose this interaction, we used floodlight analysis to identify the ranges of impulsivity (M = 2.76, SD = .79, min = 1.22, max = 4.56) for which the simple-simple effect of the change in unplanned purchase consideration was significant in the regular budget condition. In support of hypothesis 2, there was a negative effect of the change in unplanned purchase consideration for impulsivity greater than 3.37 (β = −.2513, Chi-Sq(292) = 3.85, p < .05) and a positive effect of the

change in unplanned purchase consideration for impulsivity less than 2.45 (β = .1421, Chi-Sq(292) = 4.05, $p < .05$). In contrast, and in support of hypothesis 3, the interaction between impulsivity and the change in unplanned purchase consideration was nonsignificant in the constrained trip budget condition (β = −.0484, Chi-Sq(292) = .01, $p = .91$). Thus, greater budget focus reduces the likelihood of a within-subject change in the likelihood of internal versus external motivations.

WEB APPENDIX L

STUDY 2B SUPPLEMENTARY ANALYSES

Consistent with Study 2b's main results, a logistic regression with individual fixed effects found a negative three-way interaction between buying impulsivity, unplanned purchase consideration, and budget focus ($\beta = -.07147$, $t(326) = -3.14$, $p = .002$). As expected, spotlight tests found that the two-way impulsivity and unplanned purchase consideration interaction was negative in the regular focus condition ($\beta = -.1137$, $t(326) = -2.95$, $p = .003$) and, in support of hypothesis 3, nonsignificant in the budget focus condition ($\beta = .02924$, $t(326) = 1.06$, $p = .29$).

In addition, we tested alternative calculations of the scale-based dependent variable using the hierarchical model from the main analysis. First, the three-way interaction between buying impulsivity, unplanned purchase consideration, and budget focus is significant and consistent with our theory when the dependent variable is the ratio of internal to external motivations ($\beta = -.05296$, $t(326) = -2.59$, $p = .01$). Second, the three-way interaction is also negative when the dependent variable is the difference between internal and price-based external motivations ($\beta = -.05511$ $t(326) = -2.26$, $p = .02$) or the difference between internal and non-price external motivations ($\beta = -.08528$, $t(326) = -3.48$, $p < .001$). Third, suggesting similarity between external motivation types, the three-way interaction is nonsignificant when the dependent variable is the difference between price-based and non-price external motivations ($\beta = -.03122$, $t(326) = -1.28$, $p = .20$).

WEB APPENDIX M

STUDY 2B WITHIN-SUBJECT CONTRAST-SCORE ANALYSIS

We conducted a contrast-score analysis of Study 2b following the same procedure as the contrast-score analysis for Study 2a (Web Appendix K). The data set includes 869 motivation contrast scores taken from 60 shoppers making 344 unique unplanned purchases. Since purchase motivation in Study 2b was measured using six scale items, the motivation contrast scores are continuous measures (M = −.0529, SD = 2.4057, min = −10.75, max = 9.50). We regressed the motivation contrast scores on buying impulsivity, the change in unplanned purchase consideration (M = 1.26, SD = .47, min = .69, max = 2.48), the manipulated budget focus condition contrast code (Regular Focus = 1; Budget Focus = −1), and all two-way and three-way interactions between the variables with individual fixed effects included as covariates. We mean-centered buying impulsivity, the change in unplanned purchase consideration, and the budget focus contrast code.

The main effects were nonsignificant for buying impulsivity (β = −3.7642, Chi-Sq(805) = 2.15, p = .14), the change in unplanned purchase consideration (β = −.2436, Chi-Sq(805) = 1.60, p = .21), and budget focus (β = −.2348, Chi-Sq(805) = .23, p = .63). Then, as expected, a spotlight test found a negative interaction between impulsivity and the change in unplanned purchase consideration in the regular focus condition (β = −1.2477, Chi-Sq(805) = 5.99, p = .01). To decompose the interaction in the regular focus condition, we used floodlight analysis to identify the ranges of impulsivity (M = 2.36, SD = .82, min = 1.00, max = 4.20) for which the simple-simple effect of the change in unplanned purchase consideration was significant in the regular focus condition. In support of hypothesis 2, there was a negative effect of the change in unplanned purchase consideration for impulsivity greater than 3.01 (β = −1.0186, Chi-Sq(805) = 3.85, p < .05) and a positive effect of the change in unplanned purchase consideration for impulsivity less

than 1.42 (β = .9903, Chi-Sq(805) = 3.87, $p < .05$). In contrast, and in support of hypothesis 3, a spotlight test found a nonsignificant interaction between impulsivity and the change in unplanned purchase consideration in the budget focus condition (β = .4030, Chi-Sq(805) = 2.39, $p = .12$).

WEB APPENDIX N

STUDY 3 SUPPLEMENTARY ANALYSES

Operationalizing perceived goal progress as the time spent considering unplanned purchases in seconds revealed consistent results for the interaction between buying impulsivity and unplanned purchase consideration ($\beta = -.0318$, Chi-Sq(47) = 16.38, $p < .0001$). In support of hypothesis 1, impulsivity had a positive effect on the likelihood of internal as opposed to external shopping motivation salience at the first unplanned purchase consideration ($\beta = .8252$, Chi-Sq(47) = 6.40, $p = .01$). And, in support of hypothesis 2, floodlight analysis revealed a negative effect of unplanned purchase consideration for impulsivity greater than 2.97 ($\beta = -.0172$, Chi-Sq(47) = 3.87, $p < .05$) and a positive effect for impulsivity less than 2.05 ($\beta = .0127$, Chi-Sq(47) = 3.88, $p < .05$).

In addition, we find that the main model results are consistent across multiple calculations of the shopping motivation salience dependent variable. The interaction between impulsivity and unplanned purchase consideration is negative when the dependent variable is the ratio of internal to external motivations ($\beta = -.0652$, Chi-Sq(47) = 11.01, $p < .001$), the difference between internal and price-based external motivations ($\beta = -.4539$, Chi-Sq(47) = 12.65, $p < .001$), and the difference between internal and non-price external motivations ($\beta = -.3848$, Chi-Sq(47) = 9.86, $p = .002$). Finally, suggesting similarity between types of external motivations, regressing the difference between price-based and non-price external motivations revealed a nonsignificant effect of the interaction between impulsivity and unplanned purchase consideration ($\beta = -.0805$, Chi-Sq(47) = .55, $p = .46$). The aforementioned results for different calculations of the dependent variable were consistent when using the time considering unplanned purchases to measure perceived progress.

WEB APPENDIX O

STUDY 4 POINT-OF-PURCHASE MESSAGE STIMULI

WEB APPENDIX P

STUDY 4 SUPPLEMENTARY ANALYSES

Operationalizing perceived goal progress in the main model as the logged number of non-list considerations produced consistent results for the three-way interaction between buying impulsivity, unplanned purchase consideration, and the signage contrast code (β = −.3858, t(852) = −2.76, p = .006). In support of hypothesis 4a, a spotlight test at the first unplanned purchase consideration found a positive interaction between impulsivity and the signage contrast code (β = .9081, t(852) = 3.03, p = .005). We then used floodlight analysis to identify the ranges of impulsivity for which the simple-simple effect of the signage contrast code was significant at the first unplanned purchase consideration. Internal as opposed to external messages were more likely to stimulate an unplanned purchase for consumers with impulsivity greater than 3.34 (β = .7540, t(852) = 1.97, p < .05) and external as opposed to internal messages were more likely to stimulate an unplanned purchase for consumers with impulsivity less than 1.98 (β = −.4992, t(852) = −1.98, p < .05). We then used another floodlight analysis to determine the ranges of impulsivity for which the overall interaction between unplanned purchase consideration and the signage contrast code was significant. In support of hypothesis 4b, there was a negative interaction when impulsivity is greater than 3.17 (β = −.3314, t(852) = −1.96, p < .05) and a positive interaction when impulsivity is less than 1.73 (β = .2319, t(852) = 1.97, p < .05).

Consistent with the main results using an individual fixed-effect model, a hierarchical logistic regression model with individual intercepts drawn for each participant found the expected negative three-way interaction between buying impulsivity, unplanned purchase consideration, and the signage contrast code when we measure unplanned purchase consideration in time (β =

−.00972, t(852) = −3.68, p = .0002) or with the logged number of displays (β = −.2603, t(852) = −3.40, p = .0007).

Finally, dummy coding the motivation signage variable (with internal messages as the reference condition) revealed consistent results for the three-way interaction between impulsivity, unplanned purchase consideration, and the difference between internal and external messages for the following models: the individual fixed effects model with progress measured in time (β = −.03117, t(848) = −3.89, p = .0001); the individual fixed effects model with progress measured as unplanned purchase consideration count (β = −1.1476, t(848) = −3.04, p = .002); the hierarchical model with progress measured in time (β = −.02437, t(848) = −3.18, p = .002); the hierarchical model with progress measured as unplanned purchase consideration count (β = −.7986, t(848) = −3.73, p = .0002). In other words, the results with dummy coding of the signage variable were consistent with the main model and robust to the use of an individual fixed effects model or a hierarchical model as well as a time- or count-based measure of unplanned purchase consideration.

WEB APPENDIX Q

STUDY 4 WITHIN-SUBJECT ANALYSIS

We conducted a within-subject test of the Study 4 results using random coefficient analysis (Lorch and Myers 1990). Since the dependent variable of Study 4 is a non-list purchase at a given category visit, we collect at least 12 observations per participant (i.e., the minimum number of non-list category visits per participant). This increase in sample size per participant as compared to our repeated-observation purchase motivation studies (i.e., Studies 1a, 2a, and 2b) allows us to use random coefficient analysis to conduct a supplementary within-subject analysis. In particular, the random coefficient analysis approach is equivalent to a least-squares estimated hierarchical linear or multi-level model for observations nested within participants (Thompson 2008).

The random coefficient analysis method is a two step process. First, within each consumer with variation in responses to point-of-purchase messages (N = 43), we regressed the purchase of a non-list category (Purchase = 1; No Purchase = 0) on the main effects and interaction between the dynamic variables of unplanned purchase consideration (i.e., logged number of non-list purchase considerations) and the signage contrast code (Internal Motivation Message = 2; No Message = 0; External Motivation Message = −1) using a logistic regression. We used a penalized maximum likelihood estimation for this first step (Firth 1993) due to the possibility of a low number of non-list purchases within an individual (Steffel, Williams, and Pogacar 2016). A new data set was then created with the coefficients from the interaction between unplanned purchase consideration and the signage contrast code. Second, we regressed the aforementioned interaction coefficients on the main effects and the interaction between the shopper-level variables of buying impulsivity and the total number of unplanned purchases using a linear regression. Both shopper-

level variables were mean-centered. We included the total number of unplanned purchases to test our predictions while controlling for the differences in overall basket size between participants.

As expected, buying impulsivity had a negative effect on the predicted coefficient for the interaction between unplanned purchase consideration and the message type contrast code ($\beta = -.7065$, Chi-Sq(39) = 10.12, $p = .002$). To decompose this effect, we used floodlight analysis to identify the ranges of buying impulsivity (M = 2.37, SD = .89, min = 1.11, max = 4.89) for which the intercept predicting the interaction coefficient was significant. In support of hypothesis 2, there was a negative intercept when impulsivity was greater than 2.84 ($\beta = -.4203$, Chi-Sq(39) = 3.85, $p < .05$) and a positive intercept when impulsivity was less than 1.47 ($\beta = .5616$, Chi-Sq(39) = 3.89, $p < .05$). As a result, we can conclude that buying impulsivity predicts differences in the *within* shopper changes in the effectiveness of internal versus external motivation messages.

WEB APPENDIX R

STUDY 5 SUPPLEMENTARY ANALYSES

We support our main analysis from Study 5 by conducting supplementary analyses with additional measures of the dependent variable, with perceived goal progress measure in time (i.e., cumulative time spent considering unplanned purchases), and with individual fixed effects models.

First, using the same independent variables in the main hierarchical regression model, we find the expected negative interaction between buying impulsivity and unplanned purchase consideration when the dependent variable is logged purchase price ($\beta = -.00881$, $t(404) = -4.36$, $p < .0001$) or the purchase price divided by the category average price ($\beta = -.00635$, $t(404) = -4.19$, $p < .0001$).

Second, we again find consistent results for the interaction between buying impulsivity and unplanned purchase consideration with a time-based measurement of unplanned purchase consideration when the dependent variable is price as in the main analysis ($\beta = -.00312$, $t(404) = -3.21$, $p = .001$). This finding is also consistent when the dependent variable is logged price ($\beta = -.00117$, $t(404) = -3.54$, $p = .0005$) or the purchase price divided by the category average price ($\beta = -.0008$, $t(404) = -3.32$, $p = .001$).

Third, we find consistent results when regressing price on the main effects and interaction between buying impulsivity and unplanned purchase consideration with category dummy variables and individual fixed effects included as covariates. Consistent with the main results, there was a negative interaction between impulsivity and unplanned purchase consideration ($\beta = -.02003$, $t(404) = -3.01$, $p = .003$). We also find consistent results for the interaction between impulsivity and unplanned purchase consideration when the dependent variable is logged purchase price ($\beta = -.00741$, $t(404) = -3.30$, $p = .001$) or the purchase price divided by the category average price (β

= −.00498, t(404) = −2.81, p = .005). In addition, we find consistent results in the individual fixed effects model for the two-way interaction between impulsivity and unplanned purchase consideration with a time-based measure of unplanned purchase consideration when the dependent variable is price (β = −.00311, t(404) = −2.76, p = .006), logged purchase price (β = −.00112, t(404) = −3.15, p = .002), or the purchase price divided by the category average price (β = −.00079, t(404) = −2.74, p = .007).

ADDITIONAL REFERENCES FOR WEB APPENDIX

Hirschman, Elizabeth C., and Morris B. Holbrook (1982), "Hedonic Consumption: Emerging Concepts, Methods and Propositions," *Journal of Marketing*, 46(3), 92–101.

Firth, David (1993), "Bias Reduction of Maximum Likelihood Estimates," *Biometrika*, 80(1), 27–38.

Kahn, Barbara E. and Therese A. Louie (1990), "Effects of Retraction of Price Promotions on Brand Choice Behavior for Variety-Seeking and Last-Purchase-Loyal Consumers," *Journal of Marketing Research*, 27(3), 279–89.

Lorch, Robert F. Jr. and Jerome L. Myers (1990), "Regression Analyses of Repeated Measures Data in Cognitive Research," *Journal of Experimental Psychology*, 16(1), 149–57.

Steffel, Mary, Elanor F. Williams, and Ruth Pogacar (2016), "Ethically Deployed Defaults: Transparency and Consumer Protection Through Disclosure and Preference Articulation," *Journal of Marketing Research*, 53(5), 865–80.

Thompson, Glenn L. (2008), "Eliminating Aggregation Bias in Experimental Research: Random Coefficient Analysis as an Alternative to Performing a 'by-subjects' and/or 'by-items' ANOVA," *Tutorials in Quantitative Methods for Psychology*, 4(1), 21–34.